MOFFAT

E89M / MS PROOFER AND HOLDING CABINET

Beginning with S/N 259435

SERVICE MANUAL

turbofan

Revision 1/F3608

Manual P/N MOME89

October, 2003

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This manual is designed to take a more in depth look at the E89M / MS prover and holding cabinets for the purpose of making the unit more understandable to service people.

There are settings explained in this manual that should never require to be adjusted, but for completeness and those special cases where these settings are required to change, this manual gives a full explanation as to how, and what effects will result.

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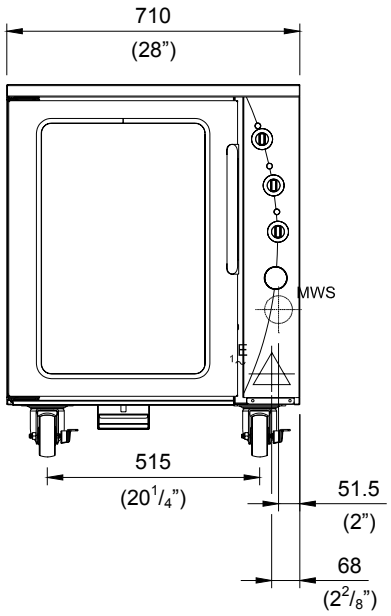
1. SPECIFICATIONS

MODEL: E89M



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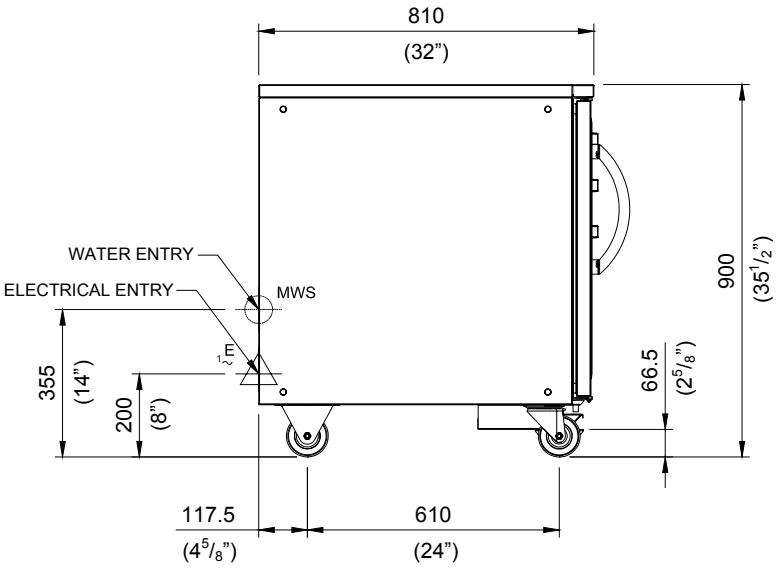

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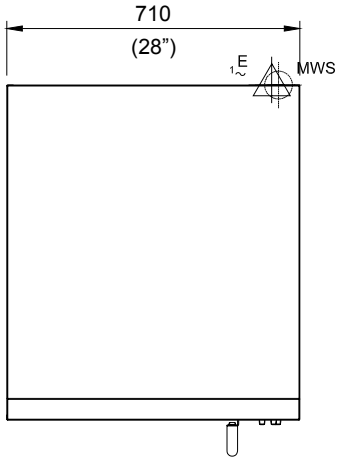


PLAN

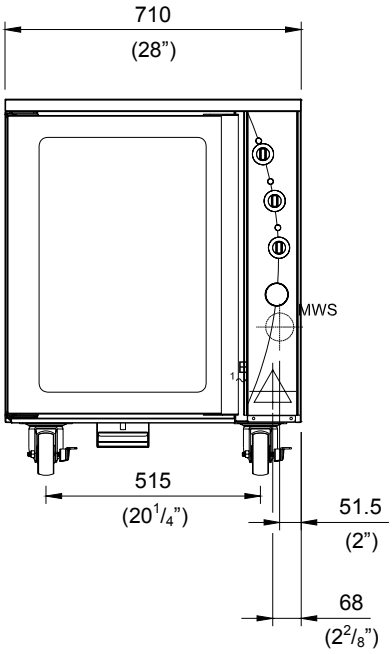
LEGEND

E - Electrical connection entry point

MWS - Water entry - 3/4" BSP (Autofill models only)
(1/2" ID Hose adapter supplied)

Dimensions shown in millimetres.
Dimensions in inches shown in brackets.

MODEL: E89MS



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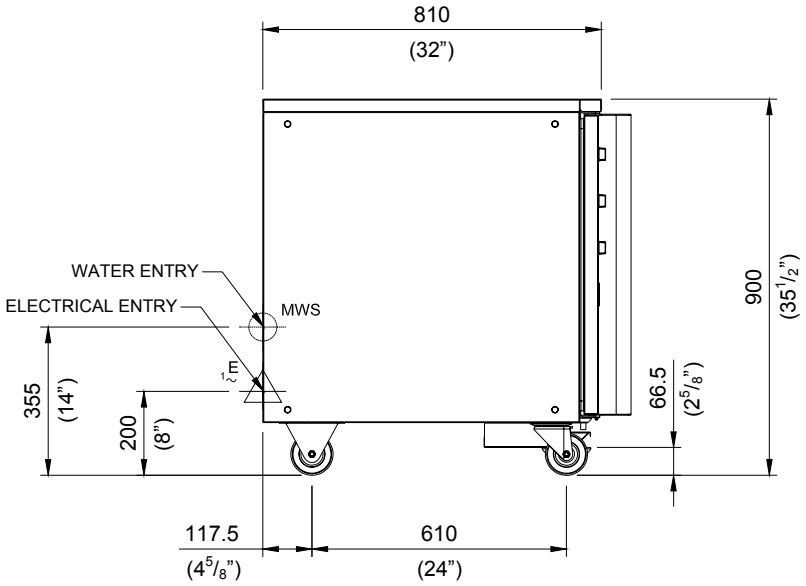

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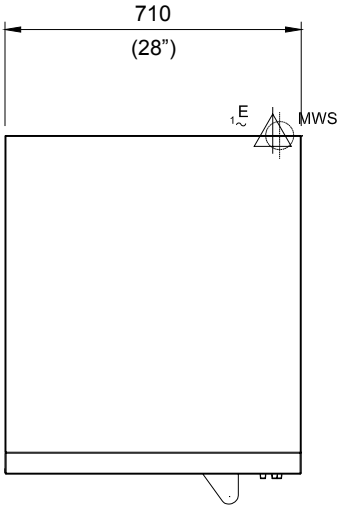


PLAN

LEGEND

- Electrical connection entry point

MWS - Water entry - 3/4" BSP (Autofill models only)
(1/2" ID Hose adapter supplied)

Dimensions shown in millimetres.
Dimensions in inches shown in brackets.

LOCATION

To ensure correct operation the following minimum installation clearances are to be adhered to:

Rear	0mm / 0”
Left-hand side	0mm / 0”
Right-hand side	25mm / 1”

Provision must be allowed for the door opening.

PROVER INTERNAL DIMENSIONS

E89M / MS

Width	460mm / 18”
Height	675mm / $26^{5}/_{8}$”
Depth	700mm / $27^{5}/_{8}$”
Prover Volume	0.22m³ / 7.8ft³

PROVER RACK/PAN SIZE CAPACITY

Width	460mm / 18” or 405mm / 16”
Depth	660mm / 26”

RACK POSITIONS

Spacing	74mm / 3”
No. of rack positions:	8

ELECTRICAL SUPPLY SPECIFICATION OPTIONS

100-120 Volts A.C. 60 Hz, 12.5 A, 1.5kW
208-220 Volts A.C. 50/60 Hz, 6.5A, 1.45kW
220-240 Volts A.C. 50/60 Hz, 7.1 A, 1.7kW

ELECTRICAL PLUG SPECIFICATION REQUIREMENTS

Australia	3-pin 250V 10A, AS/NZ 3112
Canada	3-pin 125V 15A, NEMA 5-15
New Zealand	3-pin 250V 10A, AS/NZ 3112
United Kingdom	3-pin 250V 13A fused, BS 1363A
United States	3-pin 125V 15A, NEMA 5-15
Other Countries	3-pin 250V 10A minimum, type to meet country standards

WATER SUPPLY CONNECTION

(Autofill Models Only)

Max Pressure	550 kPa / 5.5 bar / 80 psi
Min Pressure	100 kPa / 1.0 bar / 15 psi

2. INSTALLATION

⚠ WARNING: THIS APPLIANCE MUST BE GROUNDED.

⚠ WARNING: ALL INSTALLATION AND SERVICE REPAIR WORK MUST BE CARRIED OUT BY QUALIFIED PERSONS ONLY.

It is most important that the prover is installed correctly and that the operation is correct before use. Installation shall comply with local electrical, health and safety requirements.

BEFORE CONNECTION TO POWER SUPPLY

Unpack and check unit for damage and report any damage to the carrier and dealer. Report any deficiencies to your dealer. Check that the available power supply is correct to that shown on the rating plate located on the right-hand side panel.

100-120 Volts A.C. 60 Hz, 12.5 A, 1.5kW
208-220 Volts A.C, 50/60 Hz, 6.5A, 1.45kW
220-240 Volts A.C. 50/60 Hz, 7.1A, 1.7kW

LOCATION

To ensure correct operation the following minimum installation clearances are to be adhered to:

Rear	0mm / 0”
Left-hand side	0mm / 0”
Right-hand side	25mm / 1”

Provision must be allowed for the door opening.

ELECTRICAL CONNECTION

E89 models are supplied with pre-fitted cords. Ensure unit is fitted with correct cord and plug for the installation (refer specifications section).

Should changing of the cord be necessary, gain access to the electrical connection terminal block and strain relief clamp by removing the RH side panel.

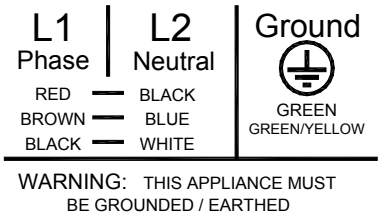


Figure 2.1

WATER CONNECTION (AUTOFILL MODELS ONLY)

A connection elbow and sealing washer is supplied with this unit for direct connection of a ½” ID hose, and is recommended for easy installation and service.

Connect water supply - Max inlet pressure 550kPa / 80psi.

Turn on water supply to check for leaks.

DOUBLE STACKING UNITS

When it is desired to mount a Turbofan E32 convection oven on an E89, a double stacking kit must be used. Available from your dealer or Turbofan distributor (see Spare Parts). For stacking kit assembly instructions, refer Appendix B.

RACK WIDTH POSITIONS

The E89 prover has been designed to accept either 460mm (18”) or 405mm (16”) wide trays, 1/1 GN, $^{1}/_{2}$ /1 GN trays or USA steam pans.

The prover comes factory set for 460mm (18”) trays, a rack spacer kit (Part no. 025685) is required to change to 405mm (16”) trays, Gastronorm pans or USA steam pans.

RATING PLATE LOCATION

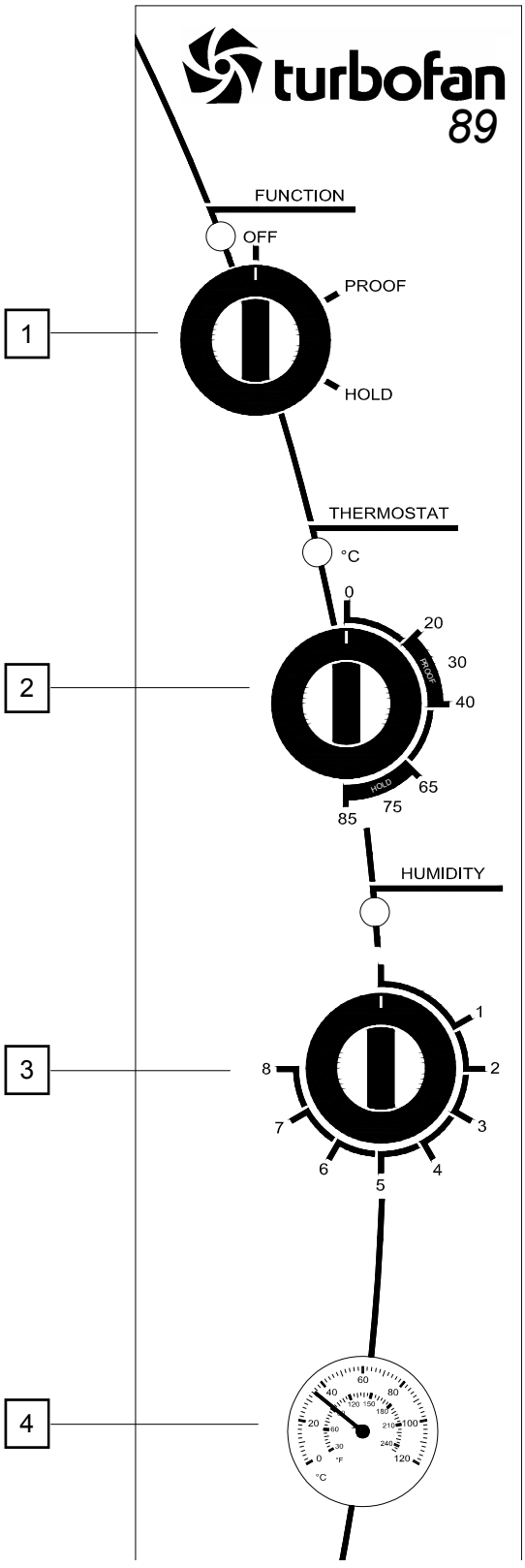
The rating plate for the E89 prover is located at the bottom left corner of the RH side panel.

Figure 2.3

3. OPERATION

NOTE: A full user's operation manual is supplied with the product and can be used for further referencing of installation, operation and service.

3.1 DESCRIPTION OF CONTROLS - E89 PROVER / HOLDING CABINETS



1. FUNCTION

OFF Unit is off.

PROOF Unit is in proofing mode. (Indicator illuminates when switched to this position)

HOLD Unit is in holding mode. (Indicator illuminates when switched to this position)

2. THERMOSTAT

Temperature range 0 - 85°C (32 - 185°F).

Indicator illuminates when elements are cycling ON to maintain set temperature.

Controls the prover air temperature.

3. HUMIDITY CONTROL

1 to 5 Setting for butter based pastries (croissants, Danish pastries etc.)

5 to 8 Settings for yeast based breads and doughs.

Indicator illuminates when elements are cycling ON to maintain set temperature.

(Controls the cabinet humidity in PROOF mode only)

Manual Water Fill Models: Open the prover door. Fill the water trough at the filling spout, located at the front of the right hand side rack, to approximately 20mm / ¾" from the top of the trough. Remember to top up the water trough when the water level is below the halfway level in the trough and before the heating element is exposed.

Auto Water Fill Models: Check that the water trough is filling, and the heating element is well covered.

4. THERMOMETER

Indicates cabinet temperature.
Dual Centigrade and Fahrenheit scale.

CONDENSATION CHANNEL

Below the door there is a condensation channel and removable water collection drawer for the purpose of collecting door condensation run-off.

3.2 EXPLANATION OF CONTROL SYSTEM

The E89M/MS Prover/Holding Cabinets feature operator controls and an electrical circuit for which a direct understanding of their operation is required before carrying out any service work or fault repair work. The control device functions and electrical circuit are explained as follows:

Function Switch

A rotary switch on the control panel of these models functions as the power On/Off switch of the unit by isolating the Line 1 phase supply.
This switch is a 3 position, 4 pole, multi-function switch which in the Off position opens circuits all poles and isolates power from all control and heating systems. The switch should operate as illustrated below.

P1 – No function / not used.
P2 – Additional air heating element.
P3 – Humidity control thermostat.
(Auto-fill models only - water solenoid, float switch, solenoid relay)
P4 – Air heating thermostat, cabinet lights, air circulation fan motor and control panel power indicator.

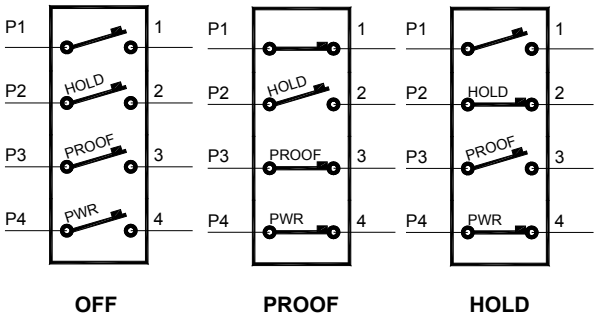


Figure 3.2.1

The air circulation fan, cabinet lights and control panel power indicator are On continuously on all E89 models when the function switch is in either of the PROOF or HOLD positions. The air circulation fan mounted at the top of the air delivery ducting ensures that the temperature and humidity throughout the cabinet is even by creating a low velocity air circulation system throughout the prover cabinet.

Proof Mode

In the 'Proof' position the function switch poles P1, P3 and P4 are closed, supplying power to the dry heat circuit, humidity circuit, cabinet lights and fan.

The proofing system controls air temperature and humidity levels by way of an air heating element and a water tank heating element.

The air heating element is positioned in the bottom of the air circulation ducting inside the cabinet and is directly controlled by the user-adjustable thermostat mounted to the control panel. The thermostat sensing bulb is mounted inside the cabinet to control the cabinet air temperature to the control panel setting. An indicator light on the control panel above this thermostat will illuminate when the thermostat has the air heating element operating and will cycle Off with the thermostat to indicate when the temperature reaches set point. The main thermostat is adjustable up to 85°C (185°F).

The humidity thermostat mounted on the control panel controls the water tank heating element, which in turn maintains the water temperature between 20°C (68°F) and 85°C (185°F). The evaporation of the water provides the cabinet humidity. The setting of the humidity thermostat (between 1 - 8) controls the rate of water evaporation and therefore the level of humidity in the cabinet.

An indicator light on the control panel above the humidity dial illuminates when the water tank element is On, and cycles Off when the thermostat switches the heating element Off to provide an indication of the humidity control. The sensing bulb of the humidity thermostat is mounted to the water tank heating element, which is immersed in the water tank. Should the water tank level drop below the heating element the humidity thermostat will cycle Off due to the sensing bulb reacting to the radiated heat off the heating element and will prevent the humidity water tank heating element burning out through excessive temperature.

Hold Mode

When the function switch is turned to the 'Hold' position the function switch pole P3 opens to turn off the humidity control circuit, and pole P2 closes to connect an additional air heating element to the air temperature thermostat circuit. In this mode the air temperature thermostat operates as it does in the proofing mode, however, in this case there is an additional air heating element switched On and Off to provide extra heating power in this mode. The additional air heating element is also mounted in the air circulation ducting.

E89M/MS Prover/Holding Cabinets are provided with a thermometer dial on the control panel to

provide an indication of the cabinet temperature. The sensing bulb of this thermometer dial is mounted next to the sensing bulb of the main thermostat inside the cabinet.

Auto water fill (option)

E89 Auto-Water fill models provide for a mains cold water supply connection for automatic water tank filling and level control. Non Auto-Water fill models require the operator to manually fill the water tank and maintain the water tank level as the water evaporates through operation.

On Auto-Water fill models an electric solenoid valve, float switch and relay maintain the water level in the humidity tank. The float switch is mounted at the rear of the water tank, and when the water is below the full level it open circuits, removing power from the coil. When de-energised, the relay removes power from the humidity thermostat circuit (therefore switching off the humidity element), and switches power to the water solenoid. As the water level reaches the full level position the float switch contact will close, re-energising the water solenoid relay, thereby closing the water solenoid valve and providing power back to the humidity thermostat. Accordingly this system will automatically maintain a full water tank whenever the function switch is in the “PROOF” position and the mains water supply is turned on.

Ensuring that the function switch is in the Off position is necessary whenever removing the water tank for cleaning as when the water tank is removed the float switch drops and the water solenoid valve will open (if the unit is on). Therefore as a precaution the mains water supply should also be turned Off whenever removing the water tank.

4. MAINTENANCE

⚠ WARNING: ALL INSTALLATION AND SERVICE REPAIR WORK MUST BE CARRIED OUT BY QUALIFIED PERSONS ONLY.

4.1 CLEANING

⚠ WARNING: ALWAYS TURN THE POWER SUPPLY OFF BEFORE CLEANING.

(!) IMPORTANT: THIS UNIT IS NOT WATER PROOF.
DO NOT USE A WATER JET SPRAY TO CLEAN INTERIOR OR EXTERIOR OF THIS UNIT.

CABINET

A good quality stainless steel cleaning compound is recommended for cleaning the inside and outside of the cabinet. Harsh abrasive cleaners may damage the surface.

SIDE RACKS

To remove, take hold of the centre rung and lift towards the prover top. To replace, hold horizontally, engage in holes and push down.

DOOR

Wash with warm water and detergent solution using a soft sponge in straight lines up and down the door.

Rinse with clean, warm water to remove detergent. Dry off.

Clean door seal with warm water and detergent solution using a soft sponge when required.

WATER TROUGH

Open right hand side rack and remove trough. Clean with warm, soapy water. Rinse thoroughly.

WATER TROUGH ELEMENT

When the element becomes limed / scaled, remove water trough and clean. Replace water trough and half fill with white vinegar or acetic acid then fill to the normal level with water. Switch unit on. Set humidity control to ‘8’ and run for approximately 30 minutes. Remove trough and clean element with damp cloth when cooled. Wash out trough and refit.

This procedure is recommended to be done once a week. Frequency of cleaning the element may be increased or decreased depending on the lime depositing on the element.

4.2 ROUTINE PROCEDURES

	PROCEDURE	INTERVAL
WET ELEMENT	Remove scaling (refer section 4.1).	As required
DOOR SEALS	Inspect door seal on door inside for wear and tear.	6 months
DOOR HINGES	Check for wear.	12 months
ELEMENTS	Check that elements are operating.	12 months

5. TROUBLE SHOOTING

⚠ **WARNING: ALL INSTALLATION AND SERVICE REPAIR WORK MUST BE CARRIED OUT BY QUALIFIED PERSONS ONLY.**

FAULT	POSSIBLE CAUSE	REMEDY
THE UNIT DOES NOT OPERATE / START	The unit is not plugged into the wall socket.	Plug in.
	The mains isolating switch on the wall, circuit breaker or fuses are "off" at the power board.	Turn on.
	The power switch on the unit is off.	Turn switch on. Indicator will illuminate.
	Incorrect electrical supply. **(Refer fault diagnosis 6.1.1)**	Ensure electrical supply correct.
	Power / Function switch faulty. **(Refer fault diagnosis 6.1.1)**	Replace. **(Refer service section 6.3.2)**
FAN DOES NOT OPERATE	Fan motor faulty. **(Refer fault diagnosis 6.1.2)**	Replace. **(Refer service section 6.3.9)**
PROVER CABINET LIGHT(S) DO NOT OPERATE	Bulb blown.	Replace bulb **(Refer service section 6.3.8)**
NO DRY HEAT	Thermostat faulty. **(Refer fault diagnosis 6.1.3)**	Replace. **(Refer service section 6.3.3)**
	Element blown. **(Refer fault diagnosis 6.1.3)**	Replace. **(Refer service section 6.3.6)**
NO DRY HEAT TEMPERATURE CONTROL	Thermostat faulty. **(Refer fault diagnosis 6.1.4)**	Replace. **(Refer service section 6.3.3)**
NO HUMIDITY	Unit is in "HOLD" mode.	Humidity only operates when unit is in "PROOF" mode.
	No water in trough.	Manual Fill: Fill trough with water. Auto fill: **(refer fault: Auto-fill not filling)**
	Humidity thermostat faulty. **(Refer fault diagnosis 6.1.5)**	Replace. **(Refer service section 6.3.4)**
	Power / Function switch faulty. **(Refer fault diagnosis 6.1.5)**	Replace. **(Refer service section 6.3.2)**
	Water tank element blown. **(Refer fault diagnosis 6.1.5)**	Replace. **(Refer service section 6.3.6)**
NO HUMIDITY CONTROL	Humidity thermostat faulty. **(Refer fault diagnosis 6.1.6)**	Replace. **(Refer service section 6.3.4)**

FAULT	POSSIBLE CAUSE	REMEDY
SLOW RECOVERY	Overloading of product. Door opened unnecessarily. Incorrect electrical supply. **(Refer fault diagnosis 6.1.1)** Door seals deteriorated. Fan motor faulty. **(Refer fault diagnosis 6.1.2)** Power / Function faulty ("HOLD" mode only) **(Refer fault diagnosis 6.1.1)** Element faulty ("HOLD" mode only) **(Refer fault diagnosis 6.1.3)**	Reduce batch size. Do not open unnecessarily. Check supply voltage is as per rating plate voltage. Inspect and replace. Replace. **(Refer service section 6.3.9)** Replace. **(Refer service section 6.3.2)** Replace. **(Refer service section 6.3.6)**
NO HEATING / HUMIDITY INDICATOR	Indicator faulty. **(Refer fault diagnosis 6.1.7)**	Replace. **(Refer service section 6.3.1)**
DOOR DOES NOT CLOSE	Tray in way of door. Interference with door. Hinges damaged.	Correctly position tray in rack. Inspect and repair. Replace. **(Refer service section 6.3.13)**
AUTOFILL WATER NOT FILLING (Autofill models only)	Water supply not turned on. Blockage in water supply. Water connection filter blocked. Water solenoid faulty. **(Refer fault diagnosis 6.1.9)** Water level float switch faulty. **(Refer fault diagnosis 6.1.9)** Solenoid relay faulty. **(Refer fault diagnosis 6.1.9)**	Turn water supply on. Disconnect water supply and inspect. Clean filter. **(Refer service section 6.3.17)** Replace. **(Refer service section 6.3.16)** Replace. **(Refer service section 6.3.18)** Replace. **(Refer service section 6.3.15)**
AUTOFILL WATER OVERFLOWING (Autofill models only)	Water level float switch faulty. **(Refer fault diagnosis 6.1.9)** Solenoid relay faulty. **(Refer fault diagnosis 6.1.9)** Water tank not fitted. Solenoid valve dirty.	Replace. **(Refer service section 6.3.18)** Replace. **(Refer service section 6.3.15)** Fit water tank. Clean solenoid valve.

6. SERVICE PROCEDURES

WARNING: ENSURE POWER SUPPLY IS SWITCHED OFF BEFORE SERVICING.

WARNING: ALL INSTALLATION AND SERVICE REPAIR WORK MUST BE CARRIED OUT BY QUALIFIED PERSONS ONLY.

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6.1 FAULT DIAGNOSIS

6.1.1 UNIT DOES NOT OPERATE / START

Incorrect electrical supply

Check that the supply voltage across phase and neutral (L1 and L2) terminals of terminal block is correct as per the voltage stated on the unit's electrical rating plate. If incorrect, check electrical connection of supply cord, and/or check electrical supply.

Power / Function switch on unit faulty

Ensure that power is isolated from the unit. Check for continuity through the switch terminals in each of the settings. The switch should operate as illustrated below. If not then the switch is faulty - replace.

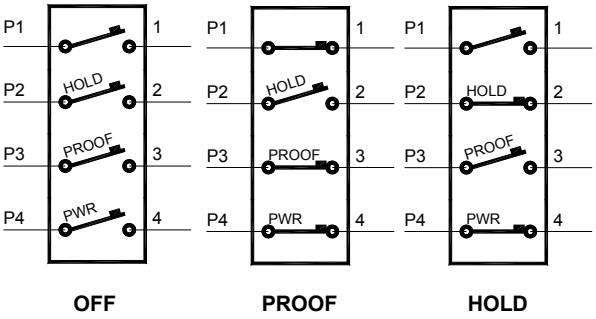


Figure 6.1.1

If checks are ok and the unit still does not operate, check the unit's wiring and/or re-diagnose exact fault with unit and refer to trouble-shooting guide.

6.1.2 FAN DOES NOT OPERATE

Fan motor faulty

Check the supply voltage across motor terminals. If there is no voltage with function switch on then check the electrical connections of supply wiring.

If voltage is correct then isolate unit from power, then check the oven fan for free rotation. Remove any obstruction.

If fan is free to spin and the voltage supply is correct, then the motor is faulty—replace.

6.1.3 NO HEAT

Thermostat faulty

With cold prover, set thermostat to maximum position. Check power to terminal 1 of top thermostat. If there is no power then check wiring. Check power at terminal 2. If there is no power then the thermostat is faulty - replace.

Alternatively the thermostat indicator light should illuminate when thermostat set to max.

Element blown

With thermostat on and heating check voltage across dry element terminals. If there is no voltage check wiring. If voltage is correct, element is faulty - replace.

To test element, disconnect terminals and check resistance across element.

Resistances;

208 - 240V models	72 Ω ±3.6 Ω
110 - 120V models	20.5 Ω ±1 Ω

6.1.4 NO DRY HEAT TEMPERATURE CONTROL

Thermostat faulty

With thermostat in off position (fully counter-clockwise), the heating indicator should be off. If not, then the thermostat is faulty - replace.

6.1.5 NO HUMIDITY

Humidity thermostat faulty

With cold proofer, set humidity to '8'. Check power to terminal 1 of bottom (humidity) thermostat. If there is no voltage then check wiring. Check power at terminal 2. If there is no power then the thermostat is faulty - replace.

Alternatively the humidity thermostat indicator light should illuminate when thermostat set to max.

Power / Function switch faulty

Ensure that power is isolated from the unit. Check for continuity through the switch terminals as illustrated below. If not then the switch is faulty - replace.

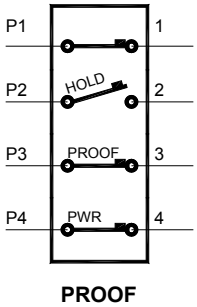


Figure 6.1.2

Element blown

With humidity thermostat on and heating check voltage across wet element terminals. If there is no voltage check wiring. If voltage is correct, element is faulty - replace.

To test element, disconnect terminals and check resistance across element.

Resistances;

208 - 240V models	72 Ω ±3.6 Ω
110 - 120V models	20.5 Ω ±1 Ω

6.1.6 NO HUMIDITY CONTROL

Humidity thermostat faulty

Switch the prover on and set the humidity to '4'. Check that the humidity thermostat cycles on / off, and using a suitable probe measure the temperature of the water in the trough. The water temperature should be 50°C/120°F ± 10%. If the temperature continues to rise above this then the humidity thermostat is faulty - replace.

6.1.7 NO HEATING / HUMIDITY INDICATOR

Indicator faulty

Check voltage across indicator terminals with controls on and appropriate thermostat turned on fully. If the voltage is correct and indicator is not illuminated then the indicator is faulty - replace. If there is no voltage then check wiring.

6.1.8 AUTOFILL NOT FILLING OR OVER FLOWING (AUTOFILL MODELS ONLY)

Water solenoid faulty

Empty water tank so float switch is in lowest position. With power ON check voltage across water solenoid coil terminals. If voltage is correct (refer electrical rating plate) but solenoid is not operating, disconnect electrical supply and remove wire connections from solenoid. Check solenoid coil windings resistance.

Correct coil resistance:

208 - 240 volt models	3650 Ω
110 - 120 volt models	1100 Ω

NOTE: If open circuit/high resistance, then the coil is faulty– replace.

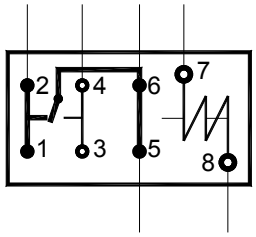
If coil is correct, rewire and listen for audible solenoid click when power is supplied. If solenoid can be heard functioning and water supply is turned on but no water is entering tank, remove water solenoid and fittings and check for blockages.

Water level float switch faulty

To check correct operation of float switch remove the float switch wire connections from terminal 8 and terminal 5 on relay. With full water tank (float switch in raised position) float switch should be closed circuit. With empty water tank (float switch in lower position) float switch should be open circuit. If not, float switch is faulty— replace.

Solenoid relay faulty

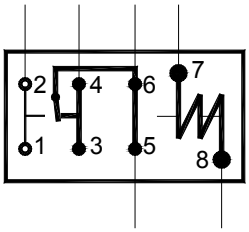
E89 auto-fill models are fitted with a 2 pole change over relay, with its coil controlled by the float switch located in the water through / tank. When the water level is below the full position the coil is not energised, allowing the relay to supply power to the water solenoid. In this position the relay should have no power at terminals 3,4 and 8, but power at terminals 1,2,5, and 6,



SOLENOID RELAY - TANK FILLING

Figure 6.1.3

When the water level reaches the full position the float switch supply's power to the relay coil, which in turn cuts power to the water solenoid and supply's power to the humidity tank. In this position the relay should have no power at terminals 1 and 2, but power at terminals 3,4,5,6, and 8.



SOLENOID RELAY - TANK FULL

Figure 6.1.4

6.2 ACCESS

6.2.1 CONTROL PANEL

1) Remove two screws at bottom of control panel.

Figure 6.2.1

2) Control panel can now be lowered and hinged on lower bracket.
3) When closing control panel ensure no wires are trapped.

6.2.2 RH SIDE PANEL

1) Undo the four screws holding the panel in place.
2) Pull out at bottom, lower to remove.

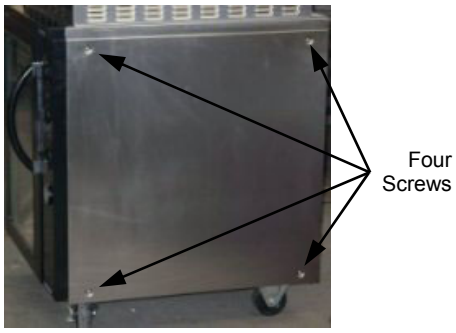


Figure 6.2.2

6.2.3 LH SIDE PANEL

1) Undo the four screws holding the panel in place.
2) Pull out at bottom, lower to remove.

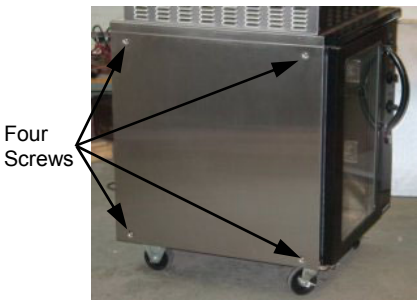


Figure 6.2.3

6.2.4 CONTROL PANEL—REAR

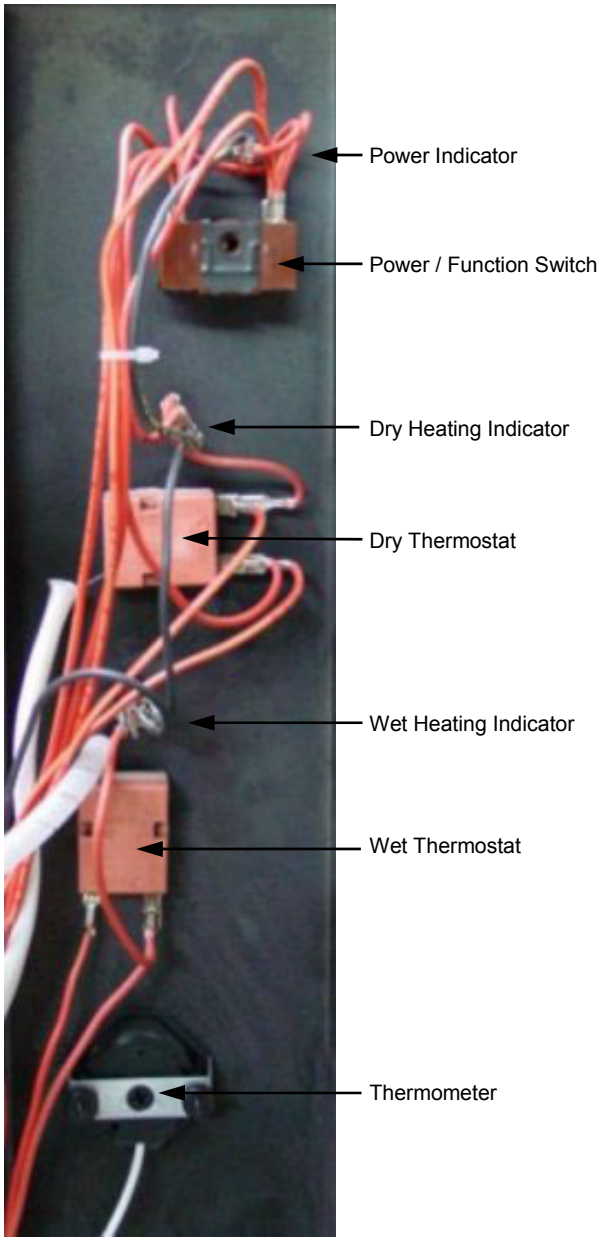


Figure 6.2.4

6.3 REPLACEMENT

6.3.1 INDICATOR LIGHT

1) With control panel open (refer 6.2.1) remove the wires from the back of the neon.

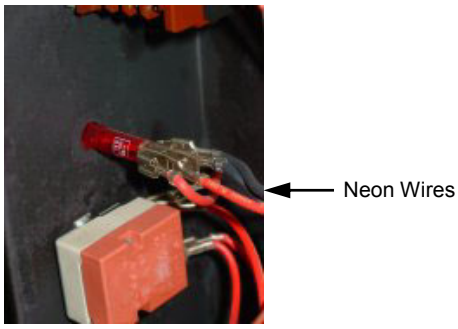


Figure 6.3.1

2) From back push neon through front of panel rotating clockwise.
3) Push new neon in from front of panel, and reconnect wires.

6.3.2 POWER / FUNCTION SWITCH

1) Remove knob off front of power switch.
2) Open control panel (refer 6.2.1).
3) Remove two screws, remove switch.

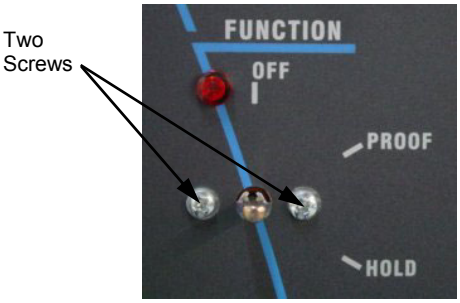


Figure 6.3.2

4) Mount new switch and transfer wires from the old switch.

6.3.3 THERMOSTAT

1) Pull knob off front of thermostat.
2) Open control panel (refer 6.2.1).
3) With door open, remove right hand side rack. Undo thermostat support bracket screw and remove bracket.

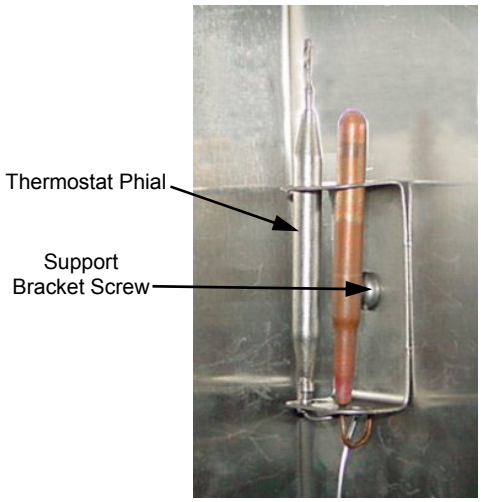


Figure 6.3.3

4) Withdraw old thermostat phial through hole under bracket in side of proofer.
5) Remove sleeving from old thermostat and fit to replacement thermostat.

Figure 6.3.4

6) Undo two screws securing thermostat to control panel and remove.

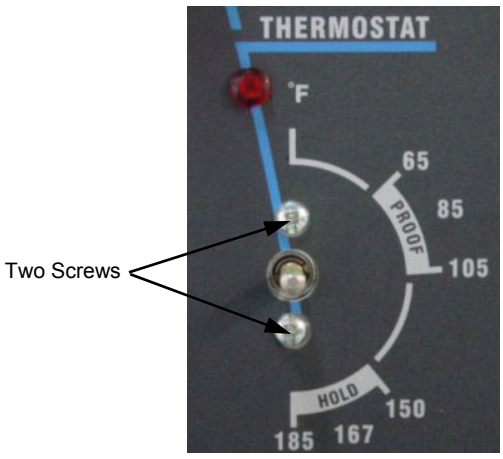


Figure 6.3.5

7) Attach new thermostat to control panel and transfer wires to new thermostat.
8) Re-assemble in reverse order.
9) Ensure hole in prover wall through which the thermostat capillary passes is re-sealed with RTV silicone sealant.

6.3.4 HUMIDITY THERMOSTAT

1) Pull knob off front of thermostat
2) Open control panel (refer 6.2.1).
3) With door open, remove right hand side rack and water trough. Undo humidity thermostat support bracket screw and remove bracket. Remove clip holding capillary to element.

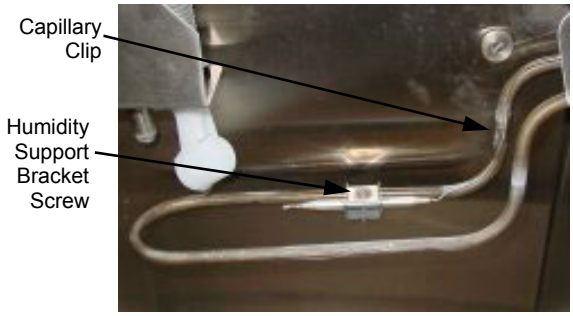


Figure 6.3.6

4) Remove thermostat support bracket in side wall, withdraw old humidity thermostat phial through hole under the bracket.
5) Remove plastic sleeving from old thermostat and fit to replacement thermostat.

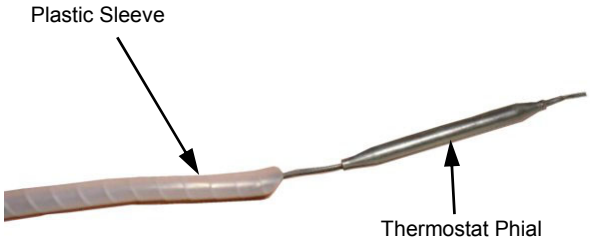


Figure 6.3.7

6) Undo two screws securing thermostat to control panel and remove.

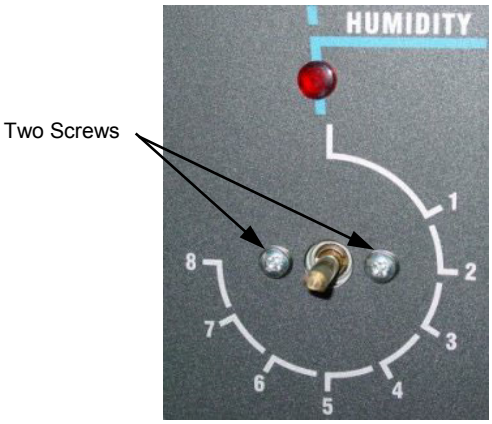


Figure 6.3.8

7) Attach new thermostat to control panel, and transfer wires to new thermostat.
8) Re-assemble in reverse order.
9) Ensure hole in prover wall through which the thermostat capillary passes is re-sealed with RTV silicone sealant.

6.3.5 THERMOMETER

1) Open control panel (refer 6.2.1)
2) With door open, remove right hand side rack (Lift off supports, and remove).
3) Undo thermometer support bracket screw and remove bracket.

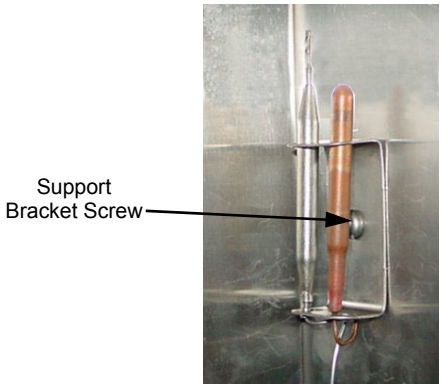


Figure 6.3.9

4) Withdraw old thermometer phial through hole under bracket in side of cabinet.
5) Undo 2 nuts securing thermometer to control panel and remove.

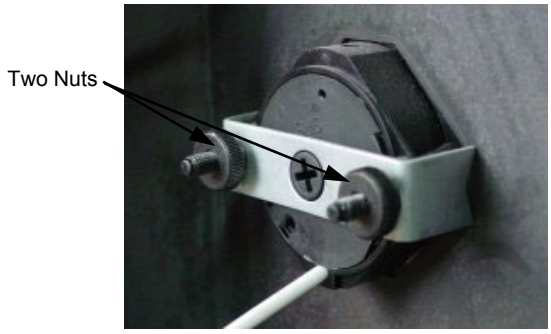


Figure 6.3.10

6) Attach new thermometer to control panel.
7) Insert new thermometer phial through cabinet side and re-attach bracket.
8) Re-assemble in reverse order.
9) Ensure hole in prover wall through which the thermostat capillary passes is re-sealed with RTV silicone sealant.

6.3.6 DRY ELEMENT

1) Remove RH side panel (refer 6.2.2), remove wires from element terminals, noting position.
2) With door open, remove right hand side rack.

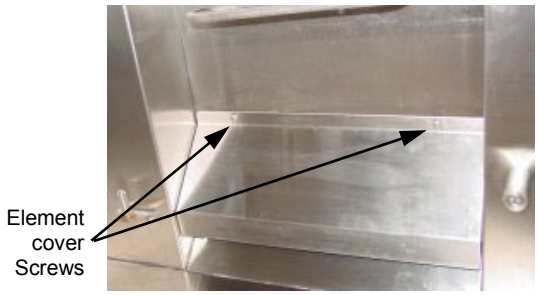


Figure 6.3.11

3) Undo the two screws holding the element cover and remove cover.

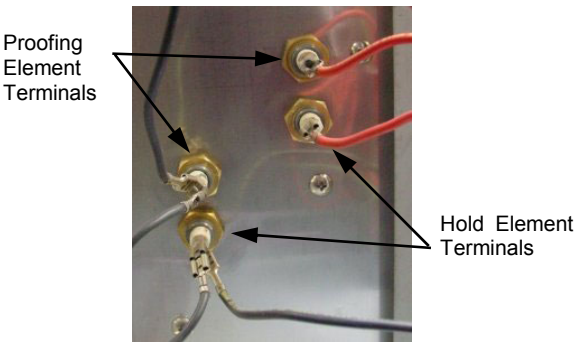


Figure 6.3.12

4) Unscrew the element from RH side (outside) of prover. Pull element carefully to remove from inside of proofer.
5) Replace and re-assemble in reverse order.

Dry Element Ratings

208 - 240 Volt Models	72 Ω ±3.6 Ω.
110 - 120 Volt Models	20.5 Ω ±1 Ω

6.3.7 WET ELEMENT

1) Remove RH side panel (refer 6.2.2), and remove wires from (rear) element terminals.
2) With door open, remove right hand side rack and water tank.
3) Remove thermostat support bracket screw (on element) and remove bracket.
4) Remove clip securing thermostat capillary to element.

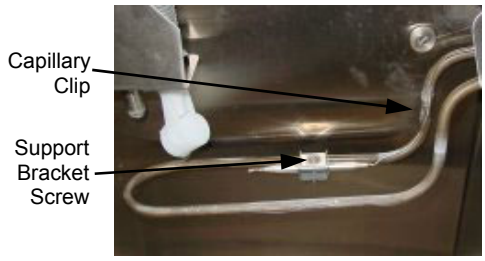


Figure 6.3.13

5) Unscrew the element from RH side (outside) of proofer.

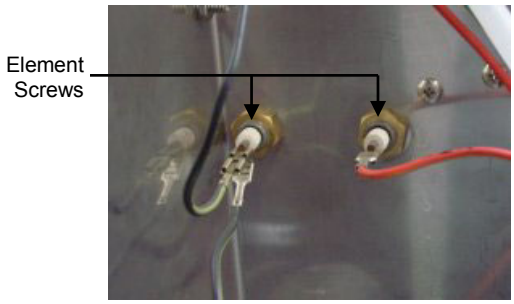


Figure 6.3.14

6) Pull element carefully into prover to remove.
7) Replace and reassemble in reverse order.

Wet Element Ratings

208 - 240 Volt Models	72 Ω ±3.6 Ω.
110 - 120 Volt Models	20.5 Ω ±1 Ω

6.3.8 LIGHT BULB / GLASS

1) Open the prover door.
2) Pull off lamp cover.

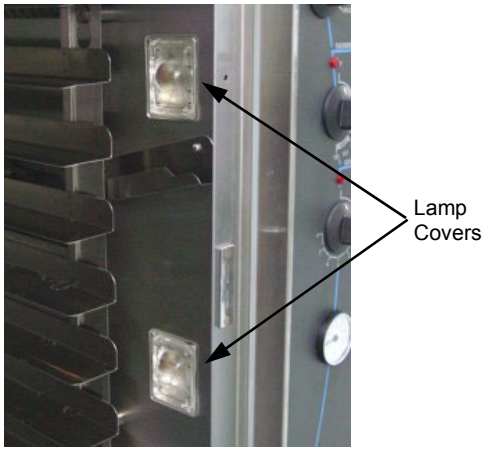


Figure 6.3.15

3) Unscrew bulb out of fitting.
4) Screw in replacement bulb.
5) Refit lamp cover.

6.3.9 FAN

1) Remove RH side panel (refer 6.2.2)
2) Remove wires from fan motor, noting their positions.

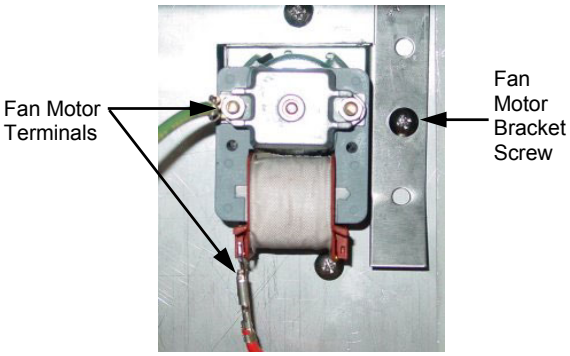


Figure 6.3.16

3) Remove fan motor bracket, one screw.
4) Slide fan assembly out of proofer.
5) Replace and re-assemble in reverse order.

6.3.10 DOOR HANDLE

1) Open prover door.
2) Remove two screws (E89M) or four screws (E89MS), remove handle.

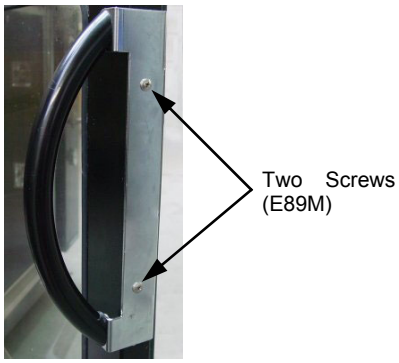


Figure 6.3.17

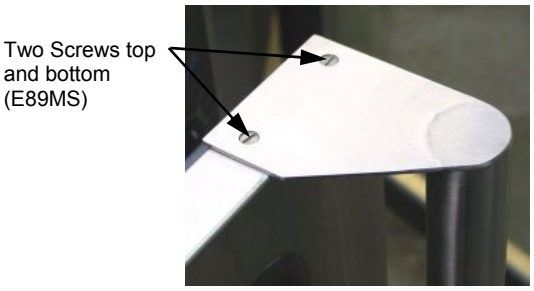


Figure 6.3.18

3) Replace and re-assemble in reverse order.

6.3.11 DOOR CATCH MAGNET

1) Open prover door.
2) Unscrew two screws securing magnet to door.
3) Replace magnet catch and re-assemble in reverse order.

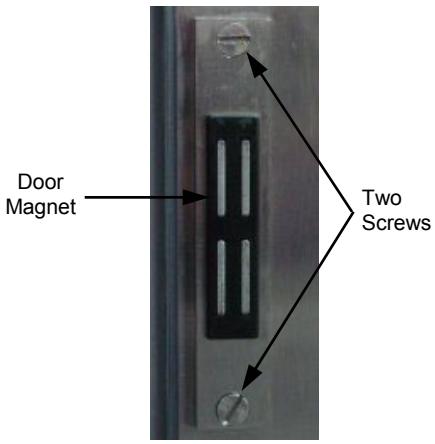


Figure 6.3.19

6.3.12 DOOR

1) Remove two screws from top of door holding hinge to door.

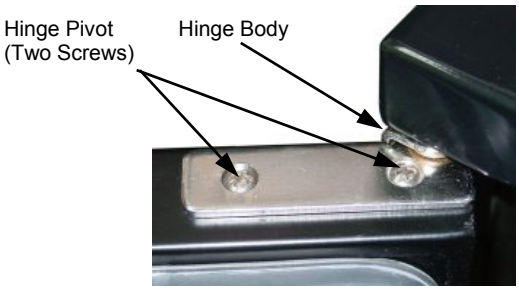


Figure 6.3.20

2) Slide door out at top and remove hinge pivot.
3) Lift door vertically off bottom hinge body (if sticky loosen bottom hinge body two screws).
4) Remove bottom hinge pivot from door.
5) Fit hinge pivots (top and bottom) to new door.
6) Re-assemble in reverse order.

6.3.13 DOOR GLASS

1) Remove door as per steps one to three of section 6.3.12
2) Lay door face down on bench and remove door seal.

3) Remove door inner (14 screws) and remove glass.
4) Clean glass and replace in reverse order. Ensure silicone seals have not been displaced from door outer and door inner.

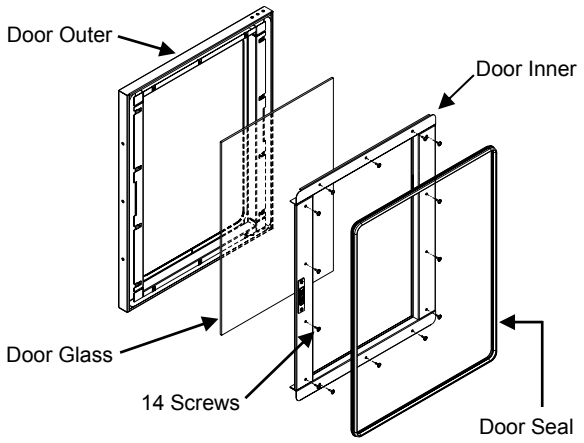


Figure 6.3.21

5) Reassemble and refit door in reverse order.

6.3.14 DOOR PIVOT BUSHES

1) Remove door as per steps one to three of section 6.3.12.
2) Remove two screws (top and bottom) holding hinge body to proofer.

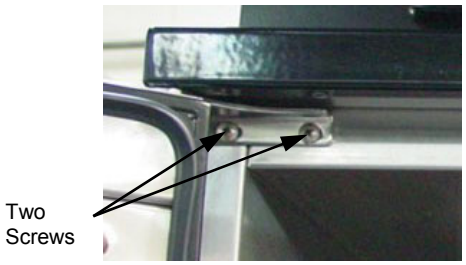


Figure 6.3.22

3) Door pivot bush can now be removed and replaced.

Figure 6.3.23

4) Re-assemble in reverse order.

6.3.15 RELAY - AUTOFILL MODELS ONLY

1) Remove RH side panel (refer 6.2.2).
2) Remove two screws securing relay to bracket.

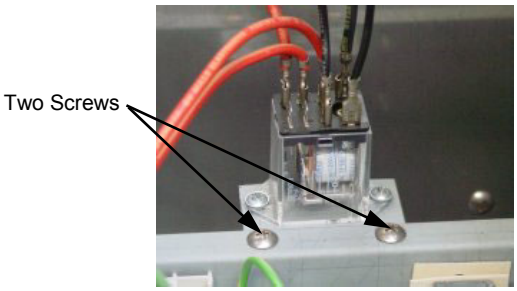


Figure 6.3.24

3) Secure new relay to bracket.
4) Transfer wires from old relay to new relay.
5) Replace RH side panel.

6.3.16 WATER SOLENOID - AUTOFILL MODELS ONLY

1) Remove RH side panel (refer 6.2.2).
2) Remove wires from solenoid, noting their positions.

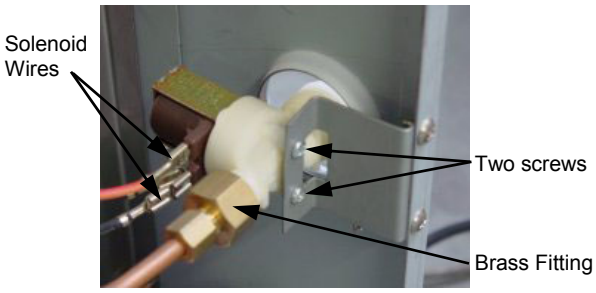


Figure 6.3.25

3) Remove brass fitting from solenoid.
4) Remove two screws securing solenoid to bracket, and withdraw solenoid.
5) Secure new solenoid with screws, and re-assemble in reverse order.

6.3.17 WATER SOLENOID CLEANING

1) Disconnect water supply from the water solenoid.
2) Remove the sieve from the water valve assembly by pulling firmly away from the assembly with a pair of pliers.

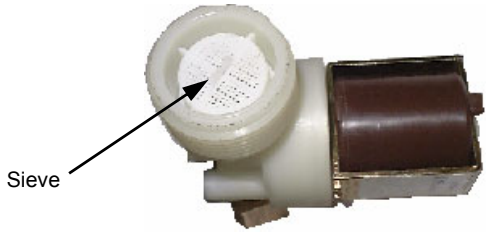


Figure 6.3.26

3) Clean the sieve, removing all dirt and grime.
4) Replace the sieve and reconnect the water supply.

6.3.18 FLOAT SWITCH - AUTOFILL MODELS ONLY

1) Remove RH side panel (refer 6.2.2).
2) Remove float switch wires from relay, noting their positions.
3) Remove brass fitting from rear of float switch.
4) Remove RH side rack and water trough from inside proofer.

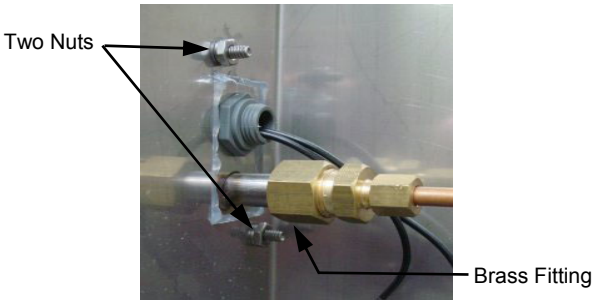


Figure 6.3.27

5) Undo two nuts from outside cabinet, and two screws inside cabinet securing float switch bracket to proofer.
6) Remove float switch assembly from proofer.

NOTE: The float switch bracket has been silicone sealed, so it may therefore be necessary to cut around the bracket with a sharp knife to assist with removal. Clean off all remaining silicone.

7) Remove the float switch sleeve, and undo the nut securing the float switch to the bracket.

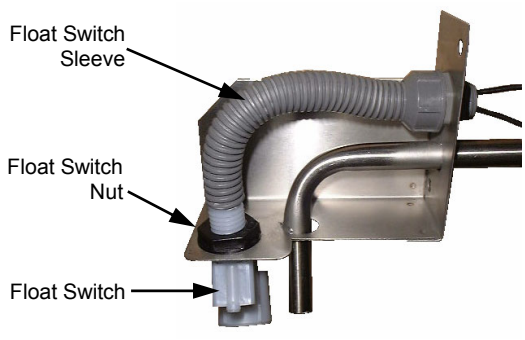


Figure 6.3.28

8) Remove the float switch from the bracket, replace, and reassemble in reverse order.

NOTE: Ensure float switch bracket is RTV silicone sealed to prevent steam leakage.

6.4 ADJUSTMENT / CALIBRATION

6.4.1 DOOR REVERSAL

1) Whilst supporting door remove bottom hinge body (two screws) and remove door.

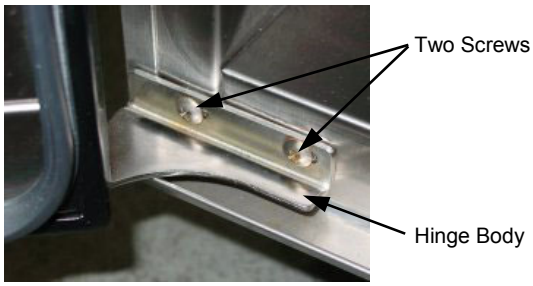


Figure 6.4.1

2) Remove top hinge body (two screws).
3) Remove four cover screws covering alternate hinge holes. Refit cover screws on opposite side.

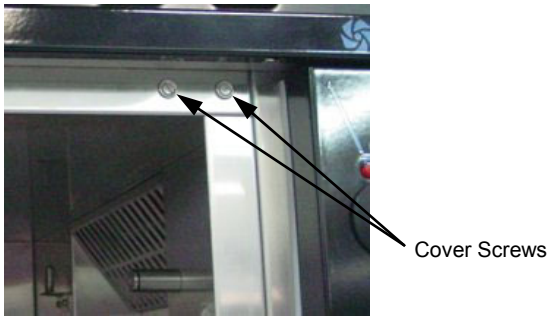


Figure 6.4.2

4) Remove LH side panel (refer 6.2.3).
5) **When changing to RH hinged door.**

   Remove LH magnet plate cover screws and clips from inside LH wall (Do not fit cover screws to old magnet position).

   Transfer door magnet plate to opposite side.

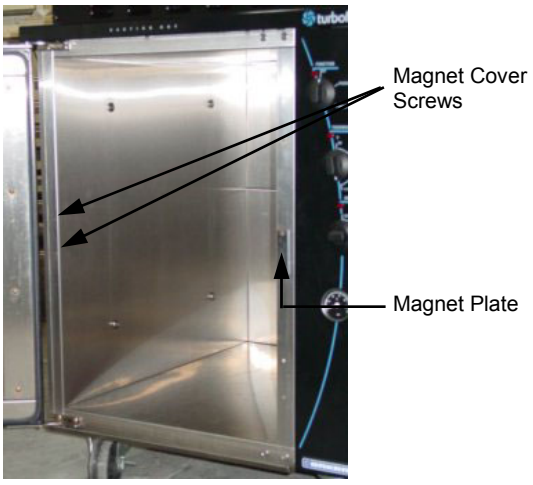


Figure 6.4.3

When changing to LH hinged door.

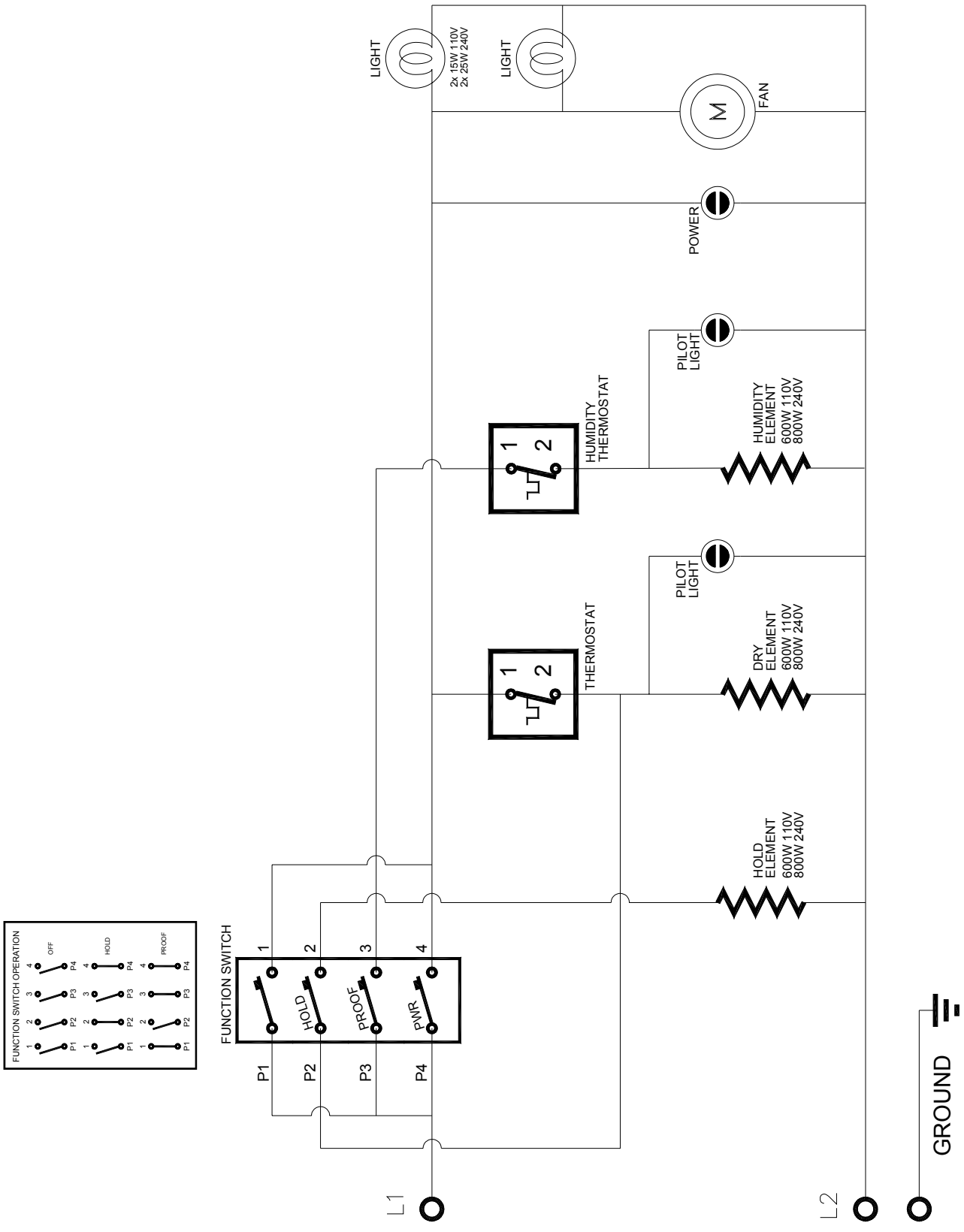
Remove magnet plate and transfer to opposite side.

Important: Redundant plate holes in LH side wall must be filled to stop steam ingress into wall cavity.

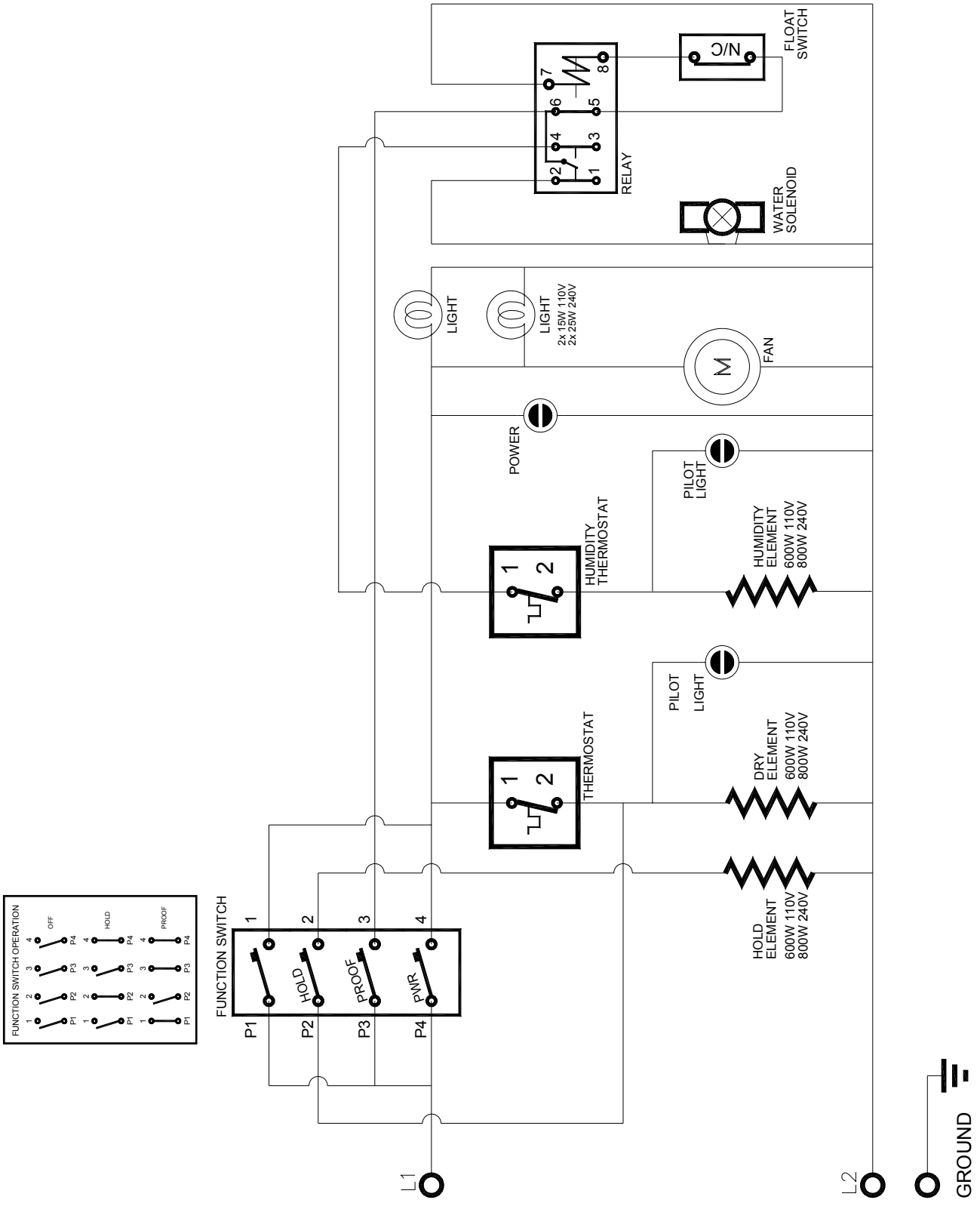
6) Fit bottom hinge body to top on opposite side, centre hinge on slots.
7) Whilst holding door in place fit remaining hinge body to bottom, securing door in position.
8) Remove door handle (E89M only) (refer 6.3.10) and refit in the higher setting, using the extra screw position.
9) Ensure door seal is removed and refitted with join at bottom, centred over middle screw head when closed.
10) Refit LH side panel.

7. ELECTRICAL CIRCUIT SCHEMATIC

7.1 E89 Manual Water Fill Holding / Prover Cabinet

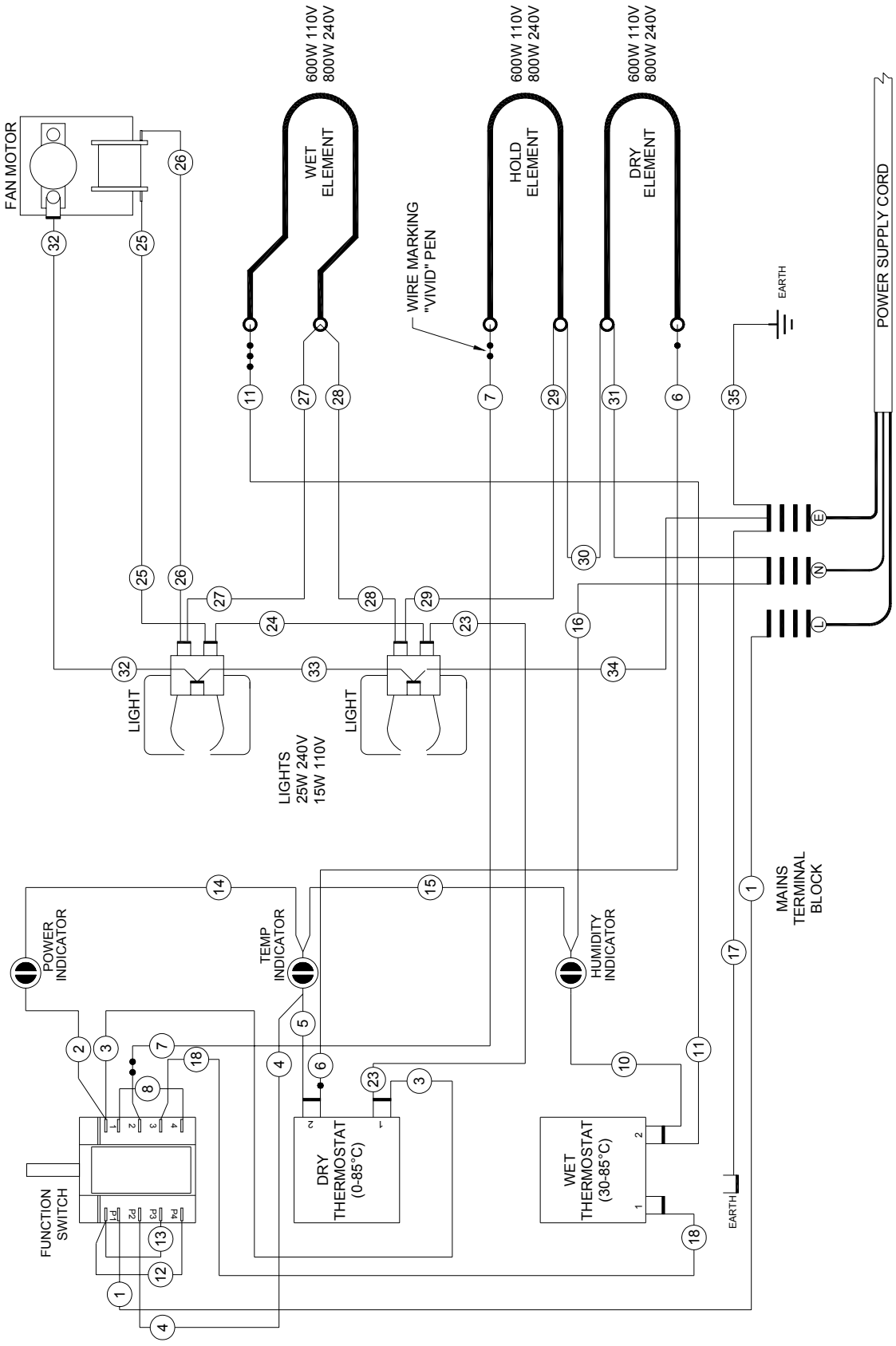


7.2 E89A Auto Water Fill Prover / Holding Cabinet

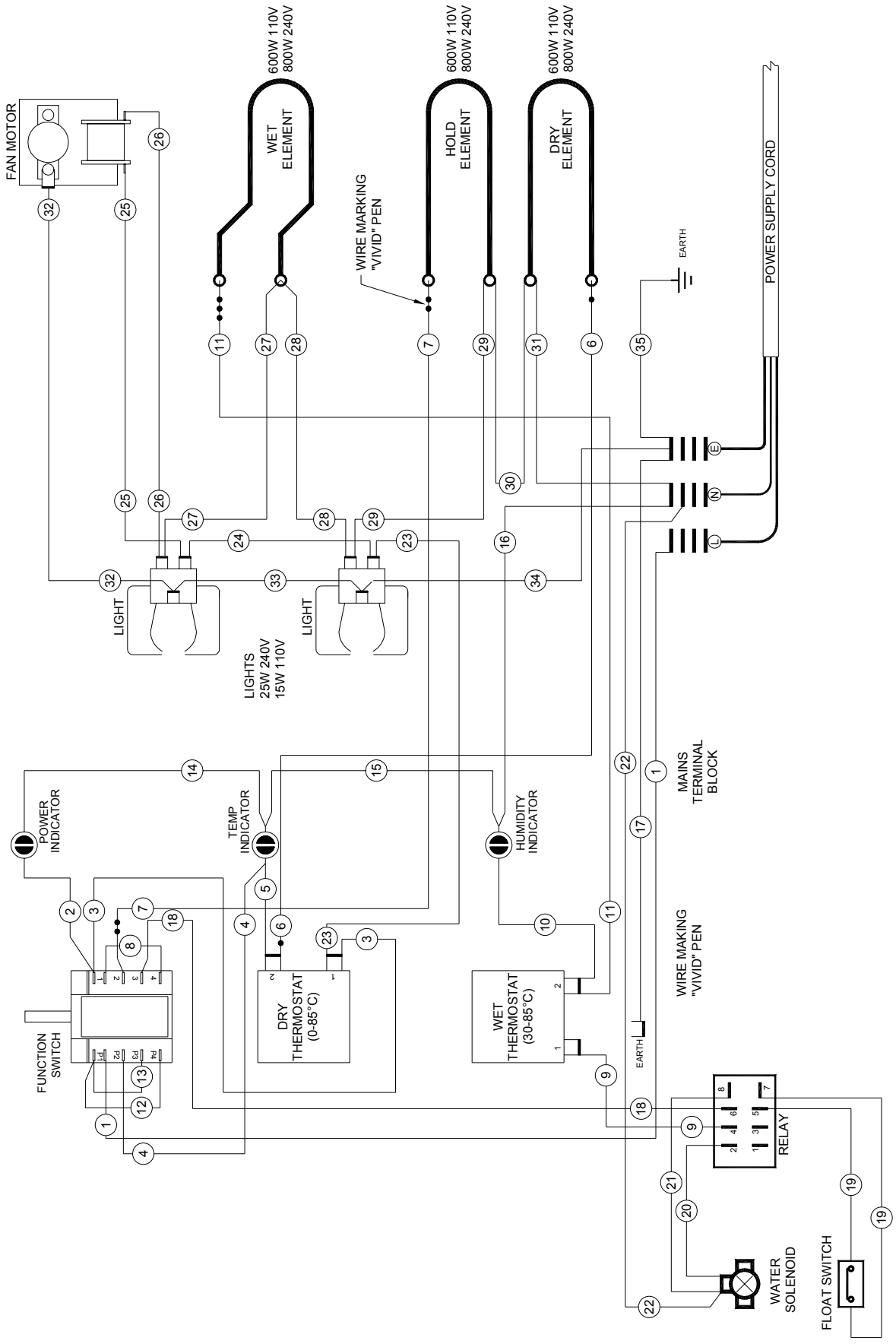


8. ELECTRICAL WIRING DIAGRAM

8.1 E89 Manual Water Fill



8.2 E89A Auto Water Fill



9. SPARE PARTS

REPLACEMENT PARTS LIST

CONTROLS

022789	Switch - Function
020823	Knob - Function
022787	Thermostat (Temperature)
024527	Thermostat (Humidity)
020823	Knob - Temperature Thermostat
021472	Knob - Humidity Thermostat
020849	Neon Indicator (240V)
023857	Neon Indicator (110V)
022788	Thermometer (Dual °C & °F)

AUTO FILL OPTION

020851	Solenoid Valve (240V)
021617	Solenoid Valve (110V)
021534	Relay (240V)
021535	Relay (110V)
022250	Float Switch

MOTOR & ELEMENTS

013998	Fan / Motor (240V)
013999	Fan / Motor (110V)
014001	Dry Element - 800W (240V)
015759	Dry Element - 600W (110V)
015224	Wet Element - 800W (240V)
015320	Wet Element - 600W (110V)

DOOR

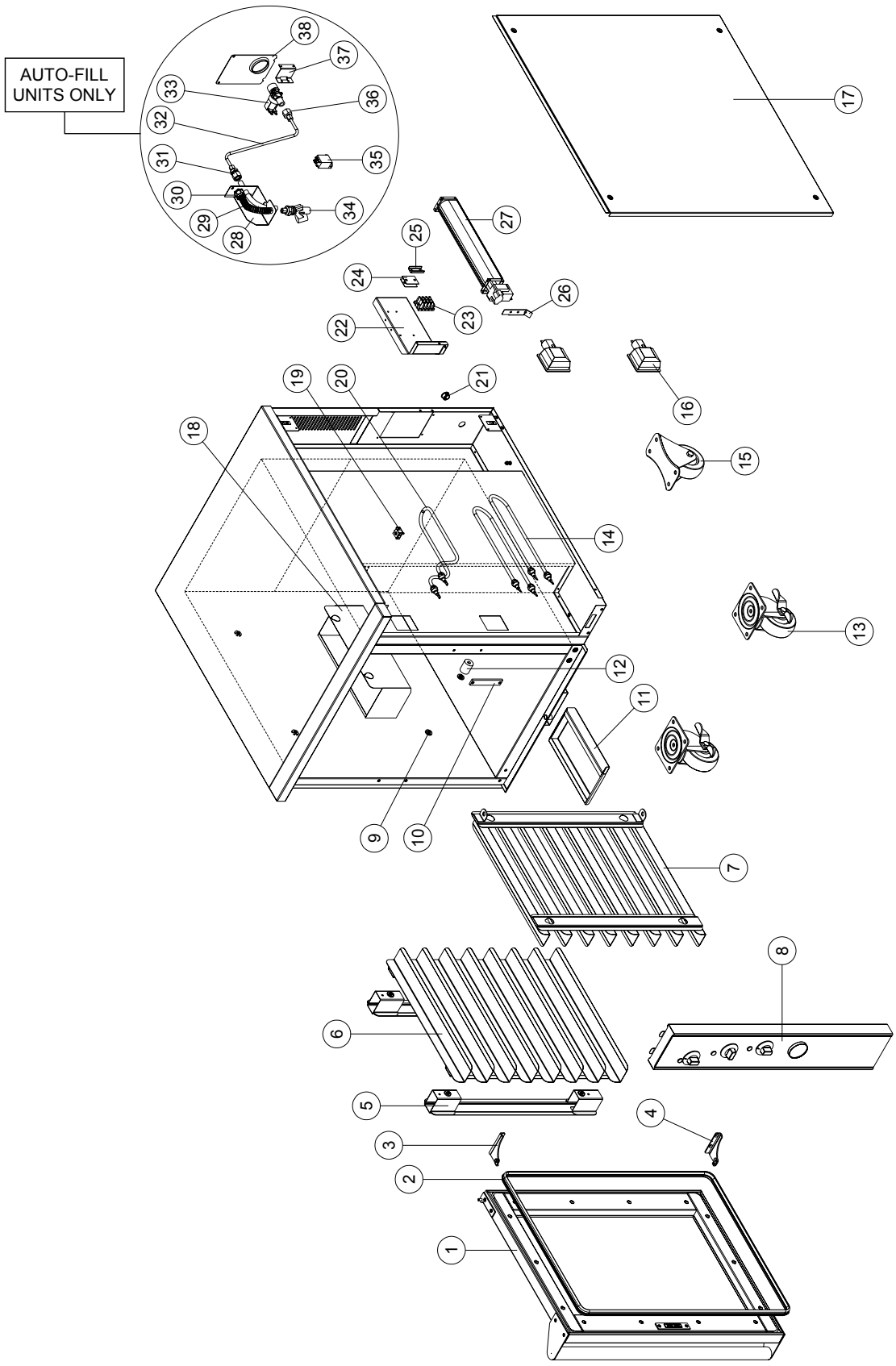
SA1686	Door Assembly (E89M)
SA1687	Door Assembly (E89MS)
021468	Handle (E89M)
025519	Handle (E89MS)
020082	Hinge Top Assembly (Assembled with bush)
020083	Hinge Bottom Assembly (Assembled with bush)
017905	Hinge Bush
018947	Magnetic Catch
025988	Door Seal

RACKS

025604	Rack RH
025608	Rack LH
025685	Rack Spacer Kit

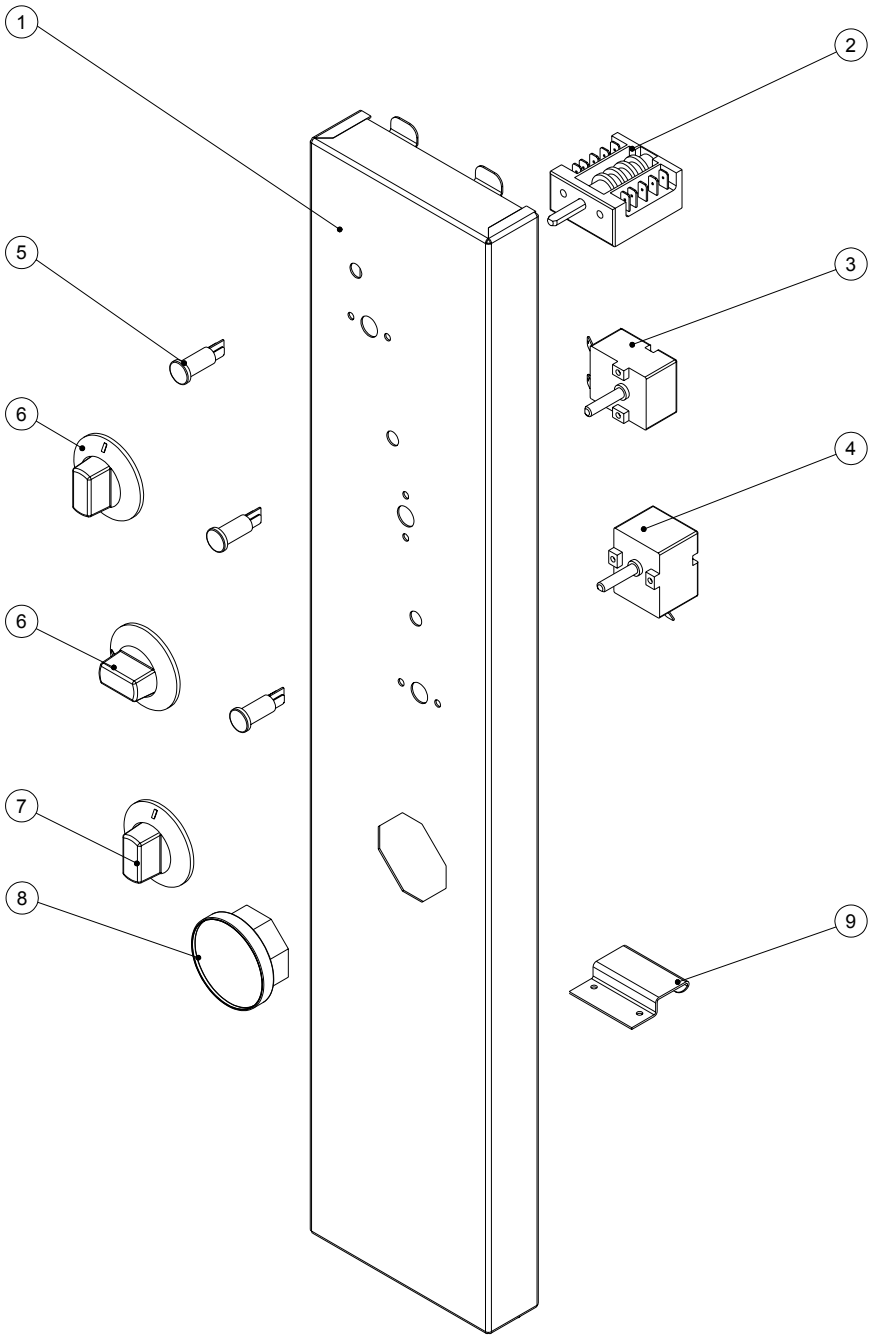
11. PARTS DIAGRAMS

11.1 MAIN ASSEMBLY



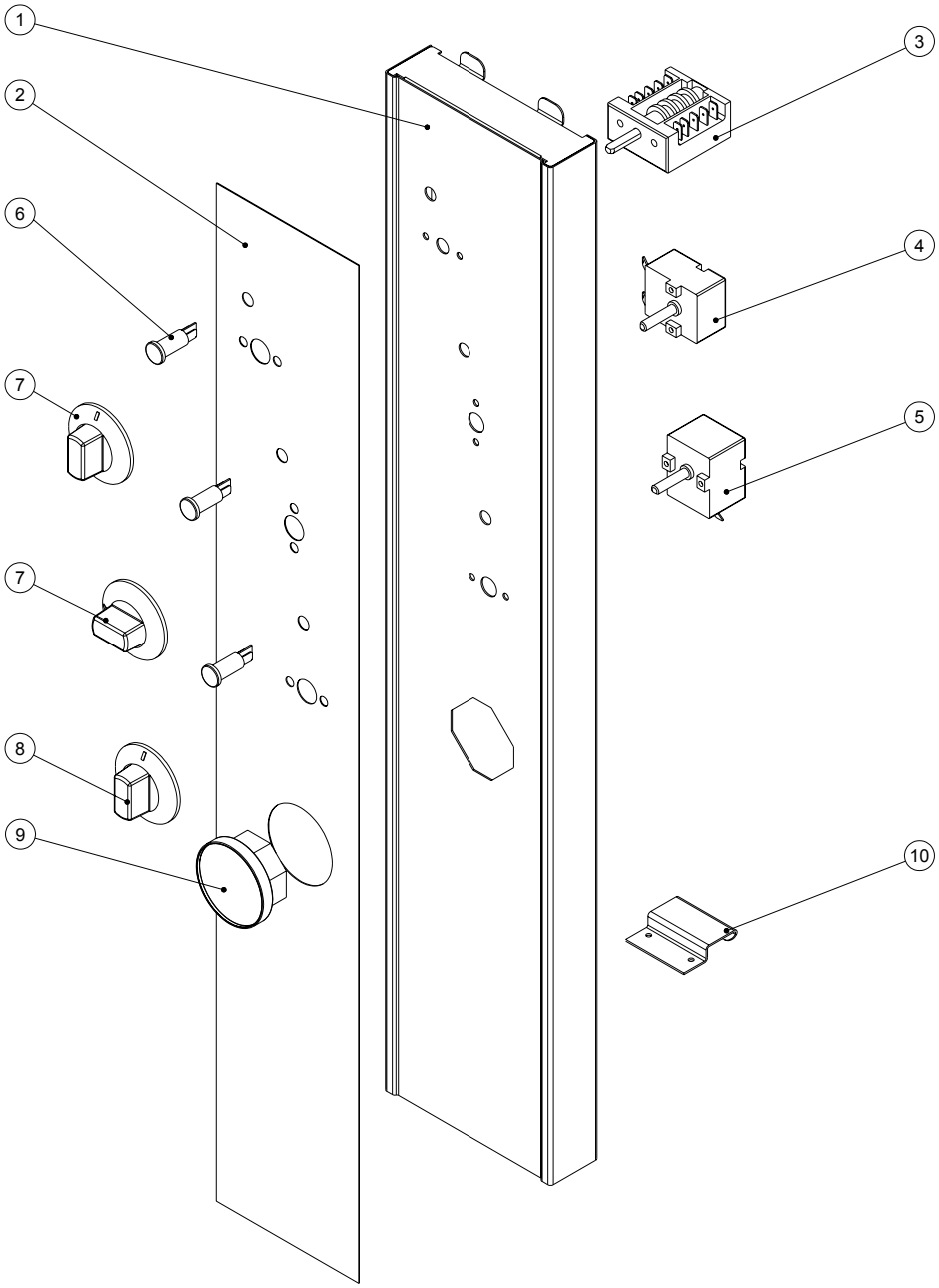
Pos	Part No.	Description
1	- - - - - -	DOOR ASSEMBLY **(REFER SECTION 11.4 & 11.5)**
2	025598	DOOR SEAL
3	020082	HINGE TOP **(ASSEMBLED WITH BUSH)**
4	020083	HINGE BOTTOM **(ASSEMBLED WITH BUSH)**
	017905	HINGE BUSH
5	025609	RACK SPACER **(OPTIONAL EXTRA)**
	025685	RACK SPACER KIT
6	025608	LH RACK WA
7	025604	RH RACK WA
8	- - - - - -	CONTROL PANEL ASSEMBLY **(REFER SECTION 11.2 & 11.3)**
9	025566	HANGER STUD
10	022758	CATCH PLATE
11	025732	CONDENSATE DRAWER
12	025601	RACK STANDOFF
13	013890	CASTOR - SWIVEL
14	014001	DRY ELEMENT - 800W (240V)
	015759	DRY ELEMENT - 600W (110V)
15	013885	CASTOR - RIGID
16	021342	LAMP HOLDER **(c/w 25W 240V BULB)**
	014218	BULB 24W (240V)
	014219	BULB 15W (115V)
17	025575	SIDE PANEL
18	025567	WATER TANK
19	012271	CLAMP BOTTOM
	012275	CLAMP TOP
20	015224	WET ELEMENT - 800W (240V)
	015230	WET ELEMENT - 600W (110V)
21	019238	SNAP BUSH 19mm
22	025573	TERMINAL BLOCK PANEL
23	013586	TERMINAL BLOCK
24	002441	INSULATOR
25	002138	CABLE CLAMP
26	025580	FAN MOTOR BRACKET
27	013998	MOTOR - (240V)
	013999	MOTOR - (110V)
Auto-fill units only		
28	022097	SENSOR BRACKET
29	022252	FLOAT SWITCH SLEEVE
30	022253	ADAPTOR & LOCKNUT
31	022998	REDUCING SOCKET 3/8” x 1/8”
32	025574	WATER TUBE
33	020851	WATER SOLENOID - (240V)
	021617	WATER SOLENOID - (110V)
34	022250	FLOAT SWITCH
35	021534	RELAY - (240V)
	021535	RELAY - (110V)
36	020869	CONNECTOR 3/8”F x 1/4” COMPRESSION
37	024702	WATER SOLENOID BRACKET
38	021619	REAR SERVICE PANEL TOP

11.2 E89M CONTROL PANEL ASSEMBLY



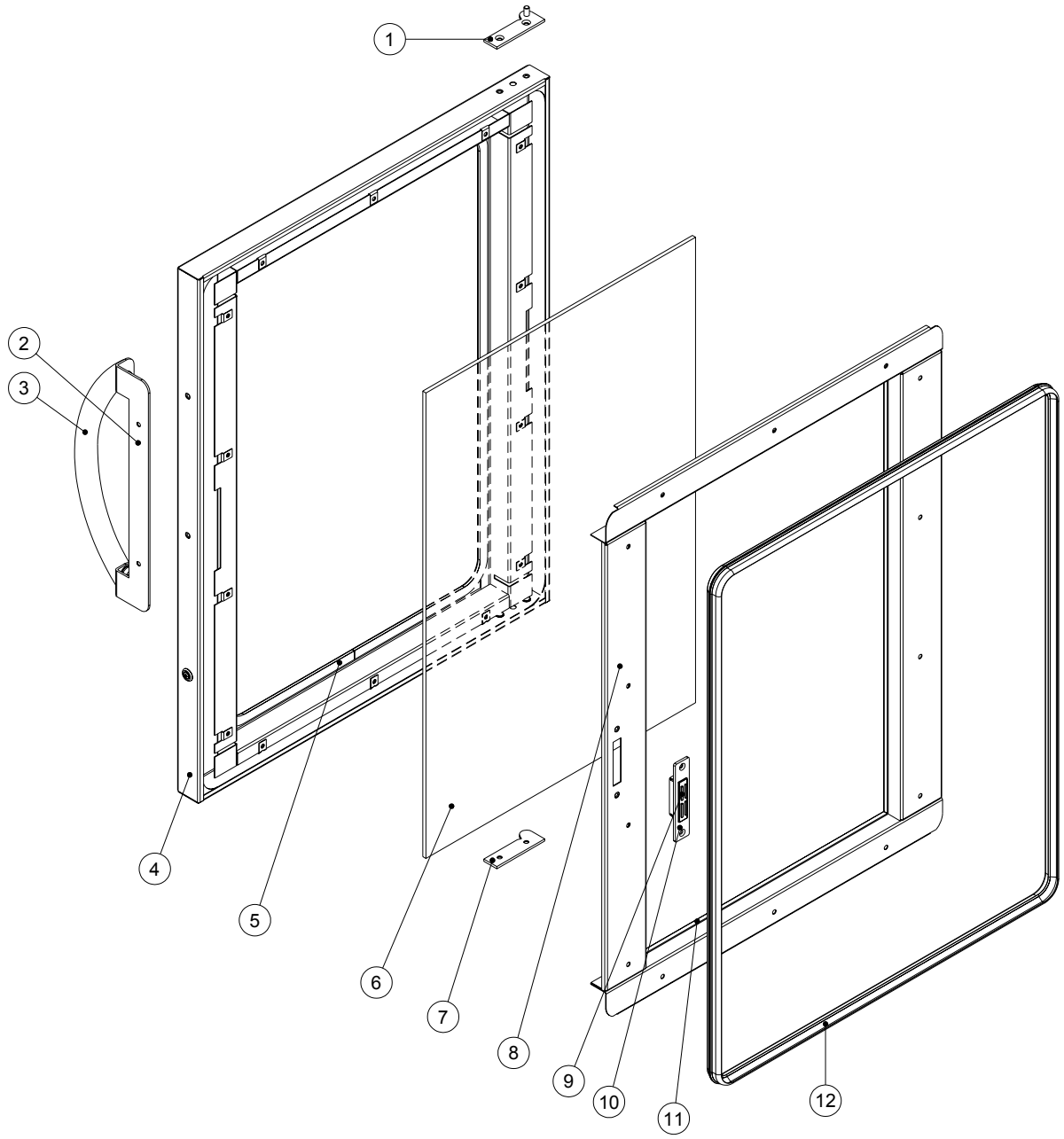
Pos	Part No.	Description
1	004995	Control panel (Blue Seal)
	005002	Control panel (Bakbar)
2	022789	Selector switch
3	022787	Thermostat 0-85°C (Dry)
4	024527	Thermostat 30-85°C (Wet)
5	020849	Pilot light (240V)
6	020823	Knob
7	021472	Knob (Humidity)
8	022788	Thermometer
9	024694	Control panel hook

11.3 E89MS CONTROL PANEL ASSEMBLY



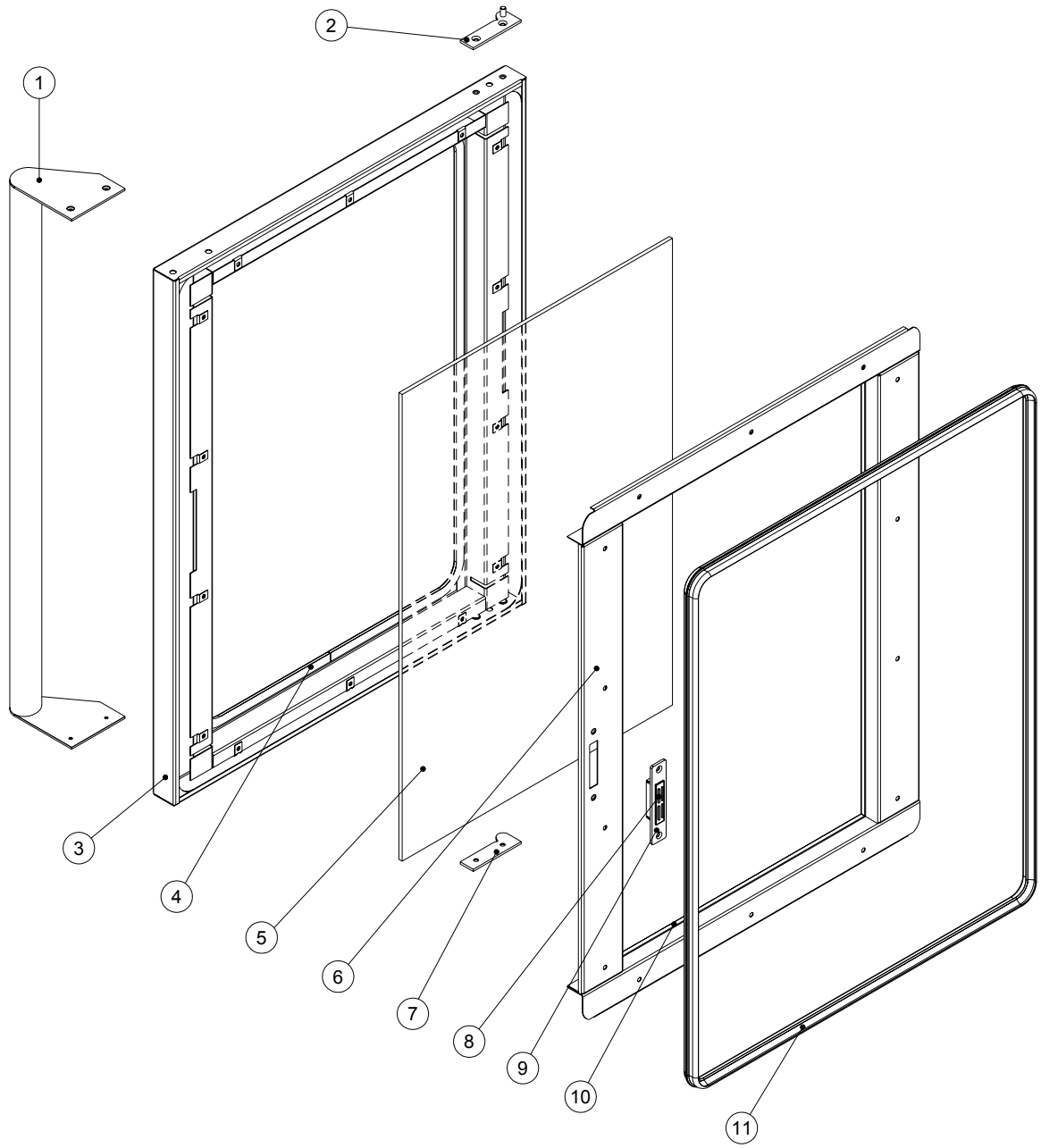
Pos	Part No.	Description
1	025582	Control panel
2	025585	Overlay °C (Bakbar)
	025586	Overlay °C (Blue Seal)
	025584	Overlay °F (Moffat)
3	022789	Selector switch
4	022787	Thermostat 0-85°C (Dry)
5	024527	Thermostat 30-85°C (Wet)
6	023857	Pilot light (110V)
	020849	Pilot light (240V)
7	020823	Knob
8	021472	Knob (Humidity)
9	022788	Thermometer
10	024694	Control panel hook

11.4 E89M DOOR ASSEMBLY



Pos	Part No.	Description
1	020082	HINGE TOP ASSEMBLY
2	025603	DOOR HANDLE BRACKET
3	021468	DOOR HANDLE
4	025597	DOOR OUTER POWDER COATED
5	090202	DOOR OUTER SEAL - 2.02m
6	025599	DOOR GLASS
7	020083	HINGE BOTTOM ASSEMBLY
8	025593	DOOR INNER FRAME
9	018947	MAGNETIC CATCH (INNER)
10	025600	MAGNET MOUNTING PLATE
11	090203	DOOR INNER FRAME SEAL - 2.00m
12	025598	DOOR SEAL

11.5 E89MS DOOR ASSEMBLY



Pos	Part No.	Description
1	025519	DOOR HANDLE
2	020082	HINGE TOP ASSEMBLY
3	025588	DOOR OUTER
4	090202	DOOR OUTER SEAL - 2.02m
5	025599	DOOR GLASS
6	025593	DOOR INNER FRAME
7	020083	HINGE BOTTOM ASSEMBLY
8	018947	MAGNETIC CATCH (INNER)
9	025600	MAGNET MOUNTING PLATE
10	090203	DOOR INNER FRAME SEAL - 2.00m
11	025598	DOOR SEAL

11. SERVICE CONTACTS

AUSTRALIA

VICTORIA - MOFFAT PTY
HEAD OFFICE AND MAIN WAREHOUSE
740 Springvale Road
Mulgrave VIC 3170
Spare Parts Department

Tel (03) 9518 3888
Fax (03) 9518 3838
Free Call 1800 337 963
Fax (03) 9518 3895

NEW SOUTH WALES - MOFFAT PTY
Unit 8/142 James Ruse Drive
Rosehill NSW 2142
Spare Parts

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Fax (03) 9518 3895

QUEENSLAND - MOFFAT PTY
30 Prosperity Place
Geebung QLD 4034
Spare Parts

Free Call 1800 337 963
Fax (03) 9518 3895

SOUTH AUSTRALIA - MOFFAT PTY
28 Greenhill Rd
Wayville SA 5034
Spare Parts

Tel (08) 8274 2116

Free Call 1800 337 963

WESTERN AUSTRALIA - MOFFAT PTY
PO Box 689
Joondalup Business Centre WA 6027
Spare Parts

Tel (08) 9305 8855

Free Call 1800 337 963

NATIONAL COVERAGE FOR 24 HOUR SERVICE OR MAINTENANCE DIAL FREE CALL 1800 622 216 (AUSTRALIA ONLY)

CANADA

Lessard Agencies Limited
PO Box 97
Stn "D"
Toronto, ONT M6P 3J5

Tel (416) 766 2764
Fax (416) 760 0394
Free Call 1 888 537 7273

NEW ZEALAND

CHRISTCHURCH - MOFFAT LTD
16 Osborne St
PO Box 10-001
Christchurch
Spare Parts

Free Call 0800 Moffat
(0800 663 328)

Tel (03) 389 1007
Fax (03) 389 1276

AUCKLAND - MOFFAT LTD
4 Waipuna Road
Mt Wellington
Auckland
Spare Parts

Tel (09) 570 6630
Fax (09) 570 0099

Free Call 0800 Moffat
(0800 663 328)

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Units 6-7 Mount St
Business Park
Birmingham B7 5QU
England

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Fax 0121-327 9711

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MOFFAT INC.
3765 Champion Blvd
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Winston-Salem
NC27115

Tel 1-800 551 8795
Fax 336 661 9546

NATIONAL COVERAGE FOR SERVICE OR MAINTENANCE DIAL FREE CALL 1800 551 8795 (USA ONLY)

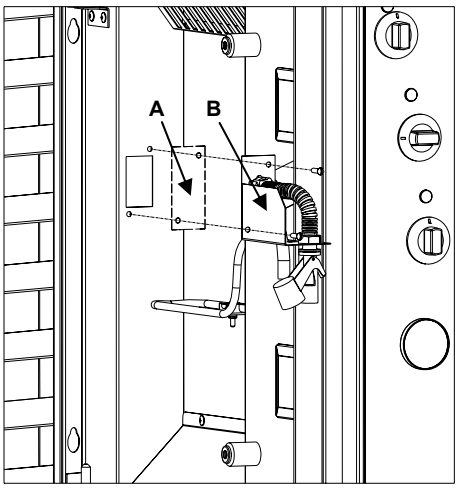
APPENDIX A. AUTOFILL KIT

⚠ WARNING: ENSURE POWER SUPPLY IS SWITCHED OFF BEFORE COMMENCING.

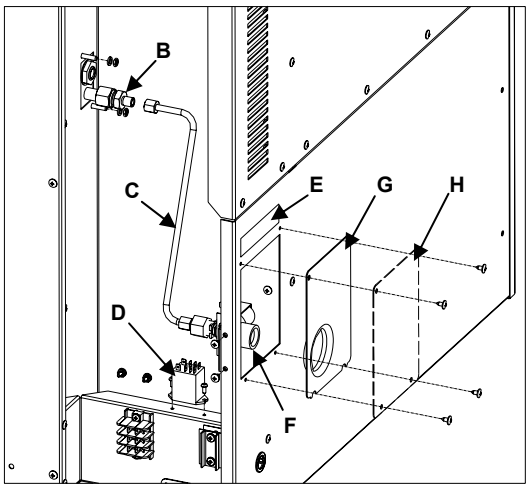
To convert a manual fill E89 prover to an auto-fill model, upgrade kit #025683 (240V) or #025752 (110V) needs to be installed as follows.

A. PROVER PREPARATION

1) Remove RH side panel (four screws), pull out at bottom and lower to remove.
2) Remove water inlet blanking plate from rear of unit (four screws). (H).
3) Open RH side rack and remove water trough.
4) Remove blanking plate from inside prover (Two bolts). (A).
   Note: Blanking plate has been silicone sealed, therefore it maybe necessary to cut around the blanking plate with a sharp knife to assist with removal. Clean off all remaining silicone.



INTERNAL VIEW



EXTERNAL VIEW

B. KIT INSTALLATION

1) Install the float switch bracket and assembly to inside of prover (B). Place a bead of RTV silicon sealant around back face of float switch bracket before securing to liner to ensure prover is sealed.
2) Fit water solenoid and mounting bracket (F) to rear panel as shown (two screws).
3) Fit 1/4" copper tube (C) to outlet tube (B) and water solenoid (F) tighten all fittings.
4) Fit relay (D) to terminal block panel (two screws).
5) Connect wiring as per wiring diagram provided (refer overleaf).
6) Fit new rear service panel (G) to rear of prover.
7) Affix max water pressure label (E) to rear panel above water inlet.
8) Connect cold water supply (1/2" ID hose) to water connection elbow. Ensure leak free connection. Maximum water pressure is 550 kPa (80psi).
9) Fit elbow to water solenoid, ensure supplied washer is used. Turn water supply on and check for leaks, no water should be flowing into trough.

C. RE-COMMISSIONING

1) Re-fit RH side panel (four screws)
2) Replace water trough.
3) Turn the power on, check that water trough fills, and stops filling approximately 20mm from the top of the tank. (Note: Humidity element will not heat until tank is filled to correct level).
4) Turn power supply off, empty water trough and repeat step 3 above.
5) Close RH side rack.

WIRING DIAGRAM - AUTOFILL KIT

Wiring changes in bold.